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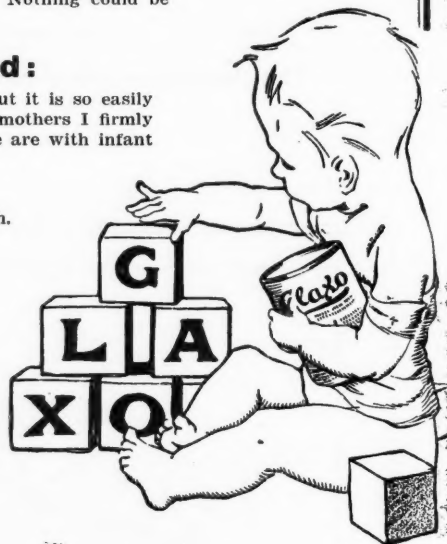
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No. 24.

THE BACTERIOLOGY OF INFLUENZAL PNEUMONIA.¹

By A. H. Tebbutt, B.A., M.B. (Syd.), D.P.H. (Oxon.),
Pathologist, Royal Prince Alfred Hospital.

I have the honour to submit a report, hereafter called Bacteriological Report No. 1, of my investigations, mainly bacteriological, on pneumonic influenza in Sydney, which have been carried out, in consultation with Professor D. A. Welsh, in the laboratories of the Royal Prince Alfred Hospital.

In his General Progress Report on the laboratory work of the Commission on Pneumonic Influenza, Professor Welsh deals with the channels in which investigation was directed.

This report deals with:—

- (1) Bacteriological findings at autopsy.
- (2) Cultivations from the blood during life.
- (3) Leucocyte counts.
- (4) Bacteriology of mild cases.
- (5) Morphology, cultural characters and a provisional classification of the organisms of the pneumococcus-streptococcus group isolated from pneumonic influenza.
- (6) Agglutination results with Rockefeller type sera.

Owing to the amount of work to be done, the objectives had to be restricted. Only organisms which would grow aerobically on human plasma-agar have been investigated. No work has been done on filter-passing organisms or on anaerobes and but little attention has been paid to the *Bacillus influenzae* of Pfeiffer.

Attention has been concentrated on the pneumococcus-streptococcus group, as it was considered at the beginning that more useful results from the point of view of immunity would follow this line of investigation than any other. At the time of writing no filter-passing organism has been definitely established as the cause of influenza and of all measures for the specific prophylaxis and treatment of pneumonic influenza, the production of an active or passive immunity to the members of the pneumococcus group seems to be the most practicable of accomplishment.

Table I. is a summary of the bacteriological findings in twenty-nine consecutive autopsies. The greatest care was taken to prevent contaminations. The autopsy was held as soon as possible after death, but owing to deaths occurring through the night and other administrative difficulties, it was often twelve to eighteen hours before the autopsy could be completed and the temperature at the time was high.

The pericardial sac was opened, the heart seared with a hot iron, a shallow cut made with a sterile scalpel and a glass pipette pushed into the right ventricle and blood withdrawn. A drop was placed on a human citrated plasma-agar plate and smeared over with a glass rod; often, the latter was then rubbed over a second plate. The lungs were then carefully handled and a pipette pushed quite superficially into a seared area of lobar or lobular pneu-

monia, or into an area of intense congestions and some exudate was withdrawn and plated out in the same way. After twenty-four hours' incubation the plates were examined and colonies picked off. If organisms of the pneumococcus-streptococcus group were found, they were carefully subcultured every few days, awaiting subsequent thorough examination. Unless otherwise stated, the term pneumococcus is not used to describe an organism unless a thorough study of the organism led me to believe that it was justified.

Table I.

No. of Post-mortem.	Heart.	Lung (Pneumonic Exudate).
1.	Numerous pneumo - cocci	Numerous pneumococci
2.	Profuse growth of staphylococcus	Profuse growth of staphylococcus
3.	Sterile	A few staphylococci.
4.	Sterile	Influenza bacillus
5.	Sterile	Influenza bacillus
6.	Sterile	Profuse growth of staphylococcus
7.	Sterile	Staphylococci
8.	Numerous pneumo - cocci	Pneumococcus predominant
9.	Pneumococcus (<i>mucosus</i>)	Pneumococcus (<i>mucosus</i>) and staphylococci
10.	Pneumococcus (<i>mucosus</i>)	Staphylococci and Gram-negative bacilli (not influenza bacillus)
11.	Gram-negative bacilli (not influenza bacillus)	A few colonies of influenza bacilli
12.	Sterile	Profuse growth of staphylococci
13.	Sterile	Pneumococcus or streptococcus (died out)
14.	Sterile	Profuse growth of staphylococci and a few colonies of Gram-negative bacilli resembling influenza bacillus
15.	Sterile	Profuse growth of staphylococci
16.	Staphylococci, diphtheroid bacilli, Gram-negative bacilli (not <i>Bacillus influenzae</i>)	Profuse growth of staphylococci
17.	Sterile	Streptococci, staphylococci
18.	Sterile	Numerous influenza bacilli, staphylococci (a few colonies)
19.	Indeterminate	Numerous influenza bacilli, a few staphylococci
20.	Large Gram-negative cocci arranged in twos and fours	Numerous minute colonies of Gram-negative bacilli, probably influenza bacillus
21.	Sterile	Pneumococci, staphylococci
22.	Sterile	Pneumococci
23.	Staphylococci	Profuse growth of staphylococci
24.	Sterile	Profuse growth of staphylococci
25.	Numerous colonies like pneumococci (capsulated Gram-negative diplococci died out before proven); also minute bacilli, probably <i>B. influenzae</i>	Minute Gram-negative bacilli, probably influenza bacilli (died out)
26.	Not investigated	Large empyema; numerous colonies of <i>Pneumococcus mucosus</i>
27.	Staphylococci	Pneumococcus
28.	Indeterminate	Staphylococci
29.	Not investigated	Fibrinous exudate over pleura contained numerous pneumococci

¹ Being a report submitted to the Chairman of a Commission appointed by the New South Wales Government to investigate pneumonic influenza, published with the kind permission of the Director-General of Public Health.

From this table it appears that influenza bacilli are often recoverable, sometimes in pure culture, sometimes associated with other organisms, from the lung exudate. In only one case was such a bacillus found in the heart's blood, and it died out before I felt I could describe it as such with certainty. This finding is similar to that of workers in other parts of the world.

Staphylococci were found in lung exudate or in heart's blood, or in both sites in many cases. In many cases the staphylococci formed an almost confluent, white, moist growth, with a peculiar sour smell; microscopically they were found to be Gram-negative or weakly Gram-positive and grew in clusters.

Sometimes, just at the margin of the plates, a few small colonies might be seen and I cannot help thinking that these profuse growths, obscured by their rapid multiplication, are most delicate and perhaps originally more numerous organisms of the pneumococcus-streptococcus and influenza groups. This opinion is supported by the fact that films made immediately from the lung exudate sometimes showed encapsulated Gram-positive diplococci when only a profuse growth of these staphylococci was obtained in the cultures. That these staphylococci do play a part in the pulmonary lesions of pneumonic influenza I cannot deny, but it is difficult to believe that such hardy and rapidly multiplying organisms do not give a false picture of the bacterial content existing at death when the cultures have to be made from post-mortem material some hours after death. Unavoidable economy in the use of culture media also undoubtedly prevented the isolation of some of the more delicate organisms where another plate would have sufficed their separation from the staphylococci.

To sum up these post-mortem findings:—

The heart's blood—

- In 13 cases .. Sterile
- In 4 cases .. Pneumococci (two of the *mucosus* type)
- In 3 cases .. Staphylococci
- In 1 case .. Pneumococci and influenza bacilli
- In 1 case .. Staphylococci, Gram-negative bacilli and diphtheroids
- In 1 case .. Gram-negative bacilli.
- In 1 case .. A Gram-positive or doubtful coccus (unknown)

The lung exudate—

- In 10 cases .. Staphylococci
- In 6 cases .. Pneumococci (one of mucous type)
- In 5 cases .. Influenza bacilli
- In 3 cases .. Influenza bacilli
- In 2 cases .. Pneumococci (of mucous type) and staphylococci
- In 1 case .. Streptococci and staphylococci
- In 1 case .. An organism of pneumo-streptococcus group (indeterminate)
- In 1 case .. Staphylococci and Gram-negative bacilli

Cultivations from the Blood During Life.

Twenty-five blood cultures in pneumonic and non-pneumonic cases were kindly made for me by Mr. Sweetapple.

From 2.5 to 10 c.cm. of blood were taken into a syringe from the veins of the forearm and added to

about 30 to 50 c.cm. of nutrient broth. Subcultures were made on to citrated plasma agar.

Table II. shows the results in six comparatively mild cases:—

Table II.

Case.	Day of Disease.	Type of Case.	Result.
1.	4	No pneumonic signs	Gram-positive bacillus (diphtheroid)
2.	8	No pneumonic signs	Sterile
3.	9	No pneumonic signs; improving	Staphylococcus
4.	3	No pneumonic signs	Sterile
5.	3	No pneumonic signs	Sterile
6.	10	No pneumonic signs	Sterile

Summary.

From six patients with influenza ill enough to be admitted to hospital, but without pneumonic signs on the day of the blood culture, no organisms were cultivated in four cases, in one case a diphtheroid bacillus and in one case a staphylococcus were cultivated. Unless very stringent precautions are taken in making these cultures *Staphylococcus albus*, diphtheroid bacilli or *Bacillus subtilis* are cultivated in a certain proportion of cases and I do not attach any diagnostic importance to their isolation. I regard them as contaminants and, in my experience, it is rarely that one obtains other organisms contaminating blood cultures. In no mild cases were pneumococci, streptococci or influenza bacilli recovered.

Table III. shows the results in nineteen pneumonic cases:—

Table III.

Case.	Day of Disease.	Type of Case.	Result.
1.	6	Pneumonic; improving	Sterile
2.	*	Critically ill; died later	Streptococcus
3.	8	Pneumonic	Staphylococcus
4.	8	Pneumonic	Sterile
5.	9	Pneumonic	Sterile
6.	15	Pneumonic; improving (died with large empyema two weeks later)	Sterile
7.	12	Pneumonic; improving	Sterile
8.	4	Pneumonic	Sterile
9.	14	Pneumonic; improving	Sterile
10.	14	Pneumonic; died later	<i>Pneumococcus mucosus</i>
11.	8	Pneumonic	Sterile
12.	4	Pneumonic	Staphylococcus
13.	4	Pneumonic; critically ill	Sterile
14.	16	Pneumonic; critically ill	Sterile
15.	7	Pneumonic	Sterile
16.	7	Pneumonic	Sterile
17.	18	Pneumonic; improving	Sterile
18.	10	Pneumonic	Sterile
19.	14	Pneumonic	Sterile

* Unknown.

Summary.

In fifteen cases no organism was cultivated and in two cases staphylococci were cultivated. If the latter be regarded as contaminants, then in 90% of cases no organisms were recovered by peripheral blood cul-

ture. In one case (Case 2) a streptococcus was obtained. It formed rather long chains of 20 to 30 small cocci, of oval shape for the most part, with some bacillary forms, was not hemolytic, did not ferment inulin and was insoluble in bile. In one case (Case 10) *Pneumococcus mucosus* was isolated; it was a Gram-positive diplococcus, forming short and moderately long chains of four to fifteen rounded and oval cocci, forming a mucus-like growth on plasma agar, fermented inulin, was soluble in bile and was agglutinated by Rockefeller type III. serum in a dilution of 1 in 4. I am therefore justified in classifying this organism as Type III. pneumococcus.

Comparison with Some English Results.

(*Royal Society of Medicine, Proceedings*, Vol. VII., No. 3.)

Goadby investigated six cases. In four the blood was sterile, in two he cultivated streptococci (hemolytic type).

Whittingham investigated fifty cases, of which seven were positive. In five cases he cultivated streptococci, in one pneumococci and in one *Diplococcus mucosus* (*sic*). It is interesting to note that of these fifty patients, seven died and five of them were amongst the seven who yielded positive blood cultures, so that only two out of seven with positive culture survived and only two out of forty-three with negative blood cultures died.

Hallows made blood cultures from ten patients, all severely ill, some moribund. In nine the bacteriological examination proved negative and in one positive, a pneumococcus being isolated.

The statistical value of these results is small, as the blood culture is made, as a rule, only once and at varying periods from the onset of the disease. They show, however, with the technique used, which is usually culturing blood from a peripheral vein into broth, that the blood is sterile in a large proportion of cases and that the streptococcus-pneumococcus group is predominant. *Bacillus influenzae* is apparently very rarely cultivated from the circulating blood.

Examination of Pleural Exudates.

These were obtained and investigated in only three cases. In two of these *Pneumococcus mucosus* (Type III.) was cultivated and in one case a diplococcus, which fermented inulin but was insoluble in bile (one sample only used) and which died out before it could be further investigated (probably a pneumococcus).

Leucocytic Counts.

During the height of the epidemic, Mr. Nimmo carried out leucocytic counts on a limited number of patients (30) in the Royal Prince Alfred Hospital. The number of observations is too small to justify any conclusions. I have obtained the impression that in the early stages of the disease there is a leucopenia and that a moderate leucocytosis portends a favourable issue.

Bacteriology of Mild Cases.

Only one aspect was touched upon. The sputum, or, when absent, swabbings of the throat, were plated out on human plasma agar. The next day the plates were searched for colonies resembling pneumococcus

colonies. A large number of subcultures were examined and the striking feature has been the predominance of streptococci and the rarity of pneumococci. Seeing that the reverse appears to have been the rule in the pulmonary lesions of pneumonic cases in Sydney, I may safely infer that in Sydney the pneumococci, as compared with the streptococci, showed a remarkable selective power of invading pulmonary tissue with fatal result, or a corresponding lowered resistance to the former organism.

The streptococci obtained from mild cases differed considerably in morphology amongst themselves, but as a general rule differed from pneumococci in the following points:—

- (1) The chains were, as a rule, longer; in some strains the chains were continuous right across the field of the microscope and in some there were clumps of chains. Sometimes the streptococci were of very minute size.
- (2) They did not ferment inulin and were almost invariably insoluble in bile.
- (3) Growth in Martin's broth was often not uniformly turbid, as it was in pneumococcal broths.
- (4) Colonies were more opaque and white by transmitted light and when examined by a low power lens ($\times 60$) loops of chains were sometimes seen going out from the margin of colonies. Though I have not seen any pneumococci colonies showing marginal chains, still not all streptococcus colonies show them.

I am indebted to Miss McConnell for invaluable assistance in this portion of the work, which was most laborious.

Morphology, Cultural Characters and a Provisional Classification of the Organisms of the *Pneumococcus-Streptococcus* Group Isolated from Pneumonic Influenza.

As soon as possible a systematic investigation of the organisms of this group was begun, but as additional cultures were obtained from time to time, all the tests applied to them have not been carried out on the same date or with the same supplies of media, ox bile, etc.. As far as possible, however, conditions have been equalized by repeating doubtful results. The clear-cut differentiations described by some American workers have not always, by any means, been obtained, though this may be my fault, due to some departures from their technique.

Source of Cultures.

Nearly all were obtained from patients with pneumonic influenza admitted to the Royal Prince Alfred Hospital and to the Emergency and other metropolitan hospitals, at which the pathological work was supervised by the Bureau of Microbiology, under the direction of Dr. Cleland. The great majority of the cultures were obtained from the cut surface of the lung at autopsy, a few only from the heart's blood at autopsy and from peripheral blood, pleural exudates, etc., during life. Single colonies were picked off blood-agar or plasma-agar plates and were re-

plated, if the microscopical examination cast a doubt on their purity.

Cultural Methods.

Stock cultures were maintained by subculturing on human plasma-glucose-agar slopes every two or three days. About four or five parts of human blood from arm veins were added directly to one part of 5% sodium citrate solution in test tubes and this was kept in the ice-chest and used as required. About 0.5 c.cm. of the supernatant clear plasma was placed in a test tube containing about 4 to 5 c.cm. of melted 1% glucose-agar at 45° to 55° C. and thoroughly mixed by rapid rotation and the mixture sloped. If hemoglobin was required in the medium, the corpuscles were stirred until the desired amount of colour was obtained. The stock cultures were incubated for not more than 24 hours and then kept at room temperature. From time to time cultures died out or grew sparsely for no obvious reason. The morphology, bile solubility and agglutination were investigated in Martin's pig stomach broth, containing 1% glucose, to which a pinch of calcium carbonate was added before inoculation, to keep down the acidity. Growth in plain broth was found too uncertain and scanty. Trypsin broth, obtained by the action of fresh chloroform water extracts of pig's pancreas on bullock's heart, was found to be less reliable than Martin's broth and was troublesome to make. Allen and Hanbury's trypsin was not available at the time. The various forms of broth were inoculated in the afternoon, were thoroughly shaken the next morning, so as to suspend the calcium carbonate for a time, and after this growth was often hastened. The amount of turbidity produced was very variable, from a faint haze to an opaque, greyish-white, uniform turbidity. *Pneumococcus mucosus* usually produced heavy growths. For use, the supernatant emulsion was pipetted off from the calcium carbonate after a total period of twenty-four hours and filtered through cotton wool. Sometimes it was centrifuged. Hiss recommends the use of the CaCO_3 and it has proved undoubtedly useful in this work.

The morphology has been studied after twenty-four hours' growth in this broth, so that the true length of the chains might be known. I have used the following arbitrary scale:—

4 to 8 cocci	=	short chain
10 to 25 cocci	=	moderate
25 to 40 cocci	=	long chain
More than 40	=	very long chain

Capsule formation was not specially investigated, as it was felt that a negative result would only be of value if the films were made from animal exudates or infected blood and laboratory animals were scanty. Fermentation of inulin has proved useful as a means of differentiation from streptococci, the main difficulty has been to induce the organisms to grow luxuriantly in inulin-containing media. At first I used Hiss's serum water medium, containing inulin (using horse serum), but did not obtain satisfactory results. I then used trypsin broth and later Martin's

broth containing 1% inulin and found these were satisfactory. Repeated inoculations were necessary before a negative result could be recorded and subcultures were made on to solid media if any doubt existed as to growth in the inulin broth. Sometimes acidity was delayed for forty-eight hours.

The test for solubility in bile is more easily carried out than the inulin fermentation test and is perhaps the most reliable single differential test as between pneumococci and streptococci.

I found ox bile satisfactory, if used fresh. After keeping some weeks it appears to lose solvent power. My sodium taurocholate solution did not give satisfactory results. As a rule, 0.2 c.cm. ox bile was added to 0.5 c.cm. of a 24 hours' calcium carbonate-glucose broth culture. Even if the latter is very turbid, the addition of the bile causes, as a rule, quite rapid clearing.

The following tables (VII., VIII. and IX.) give a general description of the pneumococcus-streptococcus group isolated in the Sydney cases.

In Table VII. are grouped all the members of the group *Pneumococcus mucosus* (Type III. pneumococcus of American bacteriologists). This is a very definite group, the members of which resemble each other very closely in cultural and biological tests. Each strain is from a separate case. This shows that in about 54 cases of pneumonic influenza, nearly all of which were fatal cases, this mucous type of pneumococcus was recovered in no less than eleven cases from situations in which its pathogenic rôle can hardly be questioned. They form an easily recognized homogeneous group and to show that this type of pneumococcus is endemic in this country, as in America. I have added a strain "Boardman" found in large numbers in the sputum of a child with chronic bronchitis. In early cultures, with care in staining I demonstrated thick capsules in some of these strains and the chains resembled a thick filament, inside which lay the cocci.

Table VIII. describes the organisms which appeared to me after a close study to be pneumococci and not streptococci, but whose cultural appearances did not have that sticky "mucous" character of the *Pneumococcus mucosus* which made the recognition of the latter easy. Differentiation from streptococci is sometimes difficult.

These pneumococci (Types I., II. and IV. of American writers) have a delicate greyish or almost colourless dew-like growth on plasma-agar, tending to dry up in a couple of days. They have a tendency to dry more rapidly in the centres than at the margins of the colonies, so that many colonies have the appearance of rings on the surface of the medium, and with the lower power of the microscope one sees that this is due to a heaping up around the margin. A high power examination of a colony on a plate reveals considerable translucency and no chains are to be seen looping out from the margins, whilst numerous diplococci are to be seen apparently on the agar between colonies. Streptococcus colonies are on the whole more opaque and white and with the microscope one

often sees a coarse granularity of the colonies on plates (secondary colonies) and often, but not always, the centre is more opaque than the margin, whilst with the high power we may see, but not always, a looping out of chains from the edge of a colony. It is the streptococcus of delicate growth which is difficult to differentiate from the pneumococcus.

In Table IX. are placed those strains which I have classified as streptococci, all with the exception of T 1 coming from the lung in pneumonic influenza *post mortem*. On plasma-agar plates none of them were markedly hæmolytic, but several of them (H 1, H 3, H 7, H 8, H 18) gave a greenish tinge on plates (*Streptococcus viridans*). I must confess that I am not quite satisfied as to sharpness of the differentiation of streptococci into the hæmolytic and *viridans* varieties and as to presence of intermediate types. I endeavoured to measure the hæmolysin more accurately by adding equal parts of broth culture to various strengths of suspensions of sheep's corpuscles. A number of pneumococci and streptococci were in-

vestigated in this way, but I find it did not help in classification. It is possible that hæmolytic power diminishes after frequent subcultures. Addition of broth cultures of pneumococci and streptococci to suspensions of sheep's corpuscles causes the colour of the latter to change from red to a brownish yellow; this change of colour occurs whether hæmolysis takes place or not. Dr. Wardlaw kindly made a spectroscopic examination and informed me that he obtained the absorption bands of methæmoglobin. Unfortunately, this does not appear to be a specific character, as *B. typhosus* and a colon bacillus also produced the brownish yellow colour.

I cannot understand the statement of Rufus Cole (*Journal of Exp. Medicine*, Volume XX., No. 4) that methæmoglobin is only produced by living pneumococci, not by their dead bodies or filtrates of cultures. By the method used the change often appeared in fifteen minutes and it is difficult to believe that this was due to the activities of living pneumococci and not to some soluble substance already produced.

Table VII.

Strain.	Source.	Morphology.	Cultural Appearances.	Bile Solubility.	Inulin Fermentation.
T 3	Lung <i>post-mortem</i>	Gram-positive diplococci and chains of 6 to 8 round and oval cocci, varying much in size and shape; many swollen and bacillary forms, sometimes in clusters	Large round and oval colonies, like drops of mucus, tenacious, drying up rapidly, margins of colonies smooth and no looping of chains at margins; centres of colonies more opaque than margins	+	+
T 4	Heart <i>post-mortem</i>	Gram-positive, oval and ground diplococci; some short chains of 4 to 6	Ditto.	+	+
T 5	Blood during life	Gram-positive diplococci and chains, short and moderately long, 4 to 15 cocci, oval and round; involution forms present	Ditto.	+	+
T 10	Empyema <i>post-mortem</i>	Gram-positive diplococci, forming chains of diplococci	Ditto.	Died out before tested	Died out before tested
T 14	Pleural fluid during life	Gram-positive diplococci, mostly as very long chains of cocci or diplococci, containing up to 100 members, round and oval shape and even with adjacent surfaces flattened (transversely oval)	Ditto.	+	+
T 15	Heart <i>post-mortem</i>	Gram-positive diplococci and some long chains; cocci rounded and even transversely oval	Ditto.	+	+
H 4	Lung <i>post-mortem</i>	Gram-positive diplococci and and short chains of 4 to 8 large oval and round cocci	Ditto.	+	+
H 11	Lung <i>post-mortem</i>	Gram-positive diplococci oval and round; a few short chains of 4 to 6 cocci	Ditto.	+	+
H 19	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 6 cocci; some markedly elongated ovals and bacillary forms	Ditto.	+	+
H 26	Lung <i>post-mortem</i>	Gram-positive diplococci, short and moderate chains of 4 to 12 cocci, rounded and transversely oval, varying much in size	Ditto.	+	+
H 39	Lung <i>post-mortem</i>	Gram-positive diplococci, short and moderate chains up to 20 cocci, round and oval; a few clusters	Ditto.	+	+
Board-man	Non-influenzal sputum in chronic bronchitis in a child	Gram-positive diplococci, but nearly all in the form of long chains of 100 or more round cocci	Ditto.	+	+

Table VIII.

Strain.	Source.	Morphology.	Bile Solubility.	Inulin Fermentation.
T 2	Heart <i>post-mortem</i>	Gram-positive diplococci, mostly oval, swollen involution forms, short chains of 4 to 6	+	+
T 6	Spinal fluid pneumococcal meningitis (uncertain whether secondary to influenza)	Gram-positive diplococci, round and oval, of rather large size; a few chains only, short, 4 to 8 cocci	+	+
T 7	Lung <i>post-mortem</i>	Gram-positive oval cocci and diplococci, short chains of 4 to 8 and some small clusters	+	+
T 9	Lung <i>post-mortem</i>	Gram-positive diplococci, but nearly all chains, moderate and long, coming together into clumps; shape, oval and round, chains composed of diplococci	+	+
T 11	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains, 4 to 10 cocci; oval shape, almost bacillary sometimes	+	+
T 12	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 12 cocci; shape, round and oval, some bacillary forms	+	+
T 13	Pleura <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 10 cocci, mostly oval	+	+
H 6	Lung <i>post-mortem</i>	Gram-positive cocci, arranged as diplococci and short chains, but mainly in clusters	+	+
H 10	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 8 oval cocci	+	+
H 13	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 6 oval cocci	+	+
H 14	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of round and oval cocci	+	+
H 15	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 10 cocci, mostly oval	+	+
H 16	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short chains of 4 to 6 cocci, oval	+	+
H 17	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short chains up to 4 cocci	+	+
H 20	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short chains, very small oval and bacillary forms; much smaller size than usual	+	+
H 23	Lung <i>post-mortem</i>	Gram-positive diplococci and short and moderate chains up to 16 cocci, mostly oval, some round, varying in size	+	+
H 24	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains up to 10 cocci; a few clusters, mostly oval, small in size	+	+
H 25	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 8 cocci, mostly oval, some round; smaller size than usual	+	+
H 27	Lung <i>post-mortem</i>	Gram-positive diplococci, short and moderate chains of 4 to 12 cocci, rounded and even transversely oval, varying in size	+	+
H 29	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 8 cocci, oval and round, varying in size	+	+
H 30	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 8 cocci, oval and round, small size, bizarre forms (involution forms)	+	+
H 31	Lung <i>post-mortem</i>	Gram-positive diplococci and short and moderate chains of 4 to 12 cocci, mostly round, some oval, size small	+	+
H 32	Lung <i>post-mortem</i>	Gram-positive diplococci and short and moderate chains of 4 to 12 cocci, oval round and transversely oval, size small	+	+
H 33	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short and moderate chains of 4 to 16 cocci; round oval and transversely oval; size small	+	+
H 34	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short chains of 4 to 8 cocci, mostly oval; size small	+	+
H 35	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains of 4 to 8 cocci, mostly oval; size small	+	+
H 36	Lung <i>post-mortem</i>	Gram-positive diplococci and short and moderate chains up to 12 cocci, mostly oval, varying in size, some very small	+	+
H 37	Lung <i>post-mortem</i>	Gram-positive diplococci and short and moderate chains of 4 to 20 cocci; many moderate chains; round and oval, varying in size	+	+
H 38	Lung <i>post-mortem</i>	Gram-positive diplococci, short chains and a few moderate chains, 4 to 12 cocci, mostly oval, bizarre forms, mostly large in size	+	+
H 40	Lung <i>post-mortem</i>	Gram-positive diplococci and a few short chains of 4 to 8 cocci, oval mostly, size small	+	+
H 41	Lung <i>post-mortem</i>	Gram-positive diplococci and short chains up to 8 cocci, mostly oval, bizarre forms, size variable	+	+

Agglutination Results with Rockefeller Type Sera.

Cultures (12 to 24 hours) in calcium carbonate Martin's broth were used for agglutination work. The macroscopic method was used.

As very small test tubes were used, about four centimetres long and diameter about 0.3 centimetres, it was necessary to have rather heavy growths in broth, in order to give an appreciable turbidity in the small tubes. The broth culture was pipetted off from above the calcium carbonate solution and filtered through cotton wool. It was found necessary to ex-

amine the broth culture microscopically, in order to be able to reject broths containing much debris.

The Rockefeller serum had to be used very economically, so I commenced using Type I. and II. at a dilution of 1 in 20, which, with equal parts of broth culture, gave a final dilution of 1 in 40. I am aware that I may have missed some Type I. and Type II. strains, but my only definite Type I. (H 32) agglutinates at 1 in 80.

I am under the impression that Rockefeller Type I. agglutinates at 1 in 20. No instructions were re-

Strains.	Dilutions of Type I. Serum.				Dilutions of Type II. Serum.				Control.		
	1-40	1-80	1-160	1-320	1-40	1-80	1-160	1-320	N.H.S. Sal.	1-10	1-2
T 2
T 7	..	+	—	—	..	+	—	—
T 9	—	—	..	—	—	—
T 12	—	—	—	—
H 6	—	—	—	—
H 10	..	+	—	—	—	—
H 11	..	+	tr.	—	..	+	tr.	—
H 20	..	+	tr.	—	..	tr.	—	—
H 23	—	—	—	—
H 24	—	—	—	—
H 25	—	—	—	—
H 29	—	—	—	—
H 30	—	—	—	—
H 31	—	—	—	—
H 34	—	—	—	—
H 35	—	—	..	tr.	tr.	—
H 36	—	—	—	—
H 37	—	—	—	—
H 41	—	—	—	—

Table XIII.—Pneumococci Agglutinated by Both Type I. and Type II. Sera (Rockefeller Institute).

Strain.	Dilutions of Type I. Serum					Dilutions of Type II. Serum					Controls	
	1-40	1-80	1-160	1-320	1-640	1-40	1-80	1-160	1-320	1-640	N.H.S. 1-10	Saline. 1-2
T 6	++	++	+	—	—	++	++	+	—	—	—	—
T 11	++	++	++	—	—	++	++	++	—	—	—	—
T 13	++	+	—	—	—	+++	++	—	—	—	—	—
H 12	++	++	+	—	—	+++	+++	++	+	—	—	—
H 13	++	+	—	—	—	++	++	+	—	—	—	—
H 14	++	+	—	—	—	++	++	+	—	—	—	—
H 15	++	++	—	—	—	+++	+++	+	—	—	—	—
H 16	+	+	—	—	—	+	+	+	—	—	—	—
H 21	++	+	—	—	—	+	—	—	—	—	—	—
H 27	++	++	+	—	—	+	+	—	—	—	—	—
H 40	+++	+++	++	—	—	+++	+++	++	—	—	—	—

In conclusion, I refer to the further work of the Commission, as set forth by Professor Welsh in his General Progress Report, dated September 25, 1919.

He recommends that (1) the classification of types of pneumococci be further inquired into and (2) that immunization be studied from the standpoint of protection against infection. It is proposed also (3) to investigate types of pneumococci in endemic lobar pneumonia in Sydney, an investigation which is very necessary in order to allow the specific serum treatment of this disease.

At the present time in Australia the use of im-

ported or Australian antisera in the treatment of lobar pneumonia is quite empirical, because of our ignorance of prevailing types.

I desire to express my gratitude to Professor D. A. Welsh for valuable suggestions and advice, to Professor A. E. Mills and Dr. Harold Ritchie for kind assistance in the exchange of journals, references, etc., and to Dr. Leslie Utz, Dr. Mona Ross, Miss MacConnell, Mr. White, Mr. Sweetapple, Mr. Nimmo, Mr. Thomas and Mr. Dawes for generous voluntary assistance both in the preparation of large quantities of prophylactic vaccine and in parts of this research.

Reports of Cases.

A CASE FOR DIAGNOSIS (THOMSEN'S DISEASE?).¹

By Alfred W. Campbell, M.D.

Honorary Consulting Neurologist, Coast Hospital, New South Wales.

The man exhibited this evening is 27 years of age and presents many, although not all, of the features of that rare disease from which Dr. Thomsen suffered and which now bears his name. The following statement of his condition will show how the classical picture is conformed to and departed from.

Family History.

Knowledge of his family history is restricted and inconclusive. He can only say that his father, a house painter, was "alcoholic" and died at the age of 50 years, that his mother is living and healthy, that he has two sisters who are married and healthy, one with two normal children, and that a brother died in infancy.

Personal History.

He had a normal childhood, but at the age of 8 years became flat-footed; this, however, did not appreciably impair his activity. He was able to play cricket and football. Not until the age of 16 years did symptoms suggestive of his present condition arise. Then he gradually lost strength and activity, became unable to walk distances, on account of stiffness and early fatigue, and found himself holding on to railings to help himself along. At the age of 17 years he began to earn a living as driver of a horse vehicle for a commercial traveller and so he carried on for several years. There came a time, however, namely, when he was 24 years of age, which was marked by positive deterioration. His muscles "refused to do what they were wanted to do"; holding the reins, mounting and dismounting his vehicle and going up and down stairs became a labour, while crossing a street occasioned dread, because he was liable to be held unable to move backwards or forwards and he was obliged to abandon his calling. At this time he sought and obtained treatment as an in-patient at the Royal Prince Alfred Hospital. Then he went to the Coast Hospital, where I saw him first about two years ago, and since that time there has been little change in his condition. His chief complaint is muscular stiffness, a painless continued cramp and weakness. He can walk short distances, as to and from

the tram and can perform light house duties, but in everything likes to take his own time; thus, to walk with another and at his pace and without rests is irksome. Pain, except an occasional ache in the back and thighs, is absent. In a general way he states that he always "feels well in himself" and is better in the morning than in the evening, losing vigour as the day goes on. He also asserts that he is better in winter than in summer. (In Thomsen's disease the reverse is usually the case, but in this connexion our temperate climate must be borne in mind.) He is abstemious and strict in his habits.

Present Condition.

He is of medium height, has an unexplained habit of holding his head slightly turned to the right, shows a slight stoop, but no lordosis, and holds his hands with fingers extended. His gait is stiff and shambling, he takes short steps, does not lift his feet well, is apt to trip and is easily pushed over. In the passive state he is free from tremor and he is not ataxic, though he says he has been unjustly accused of being under the influence of alcohol.

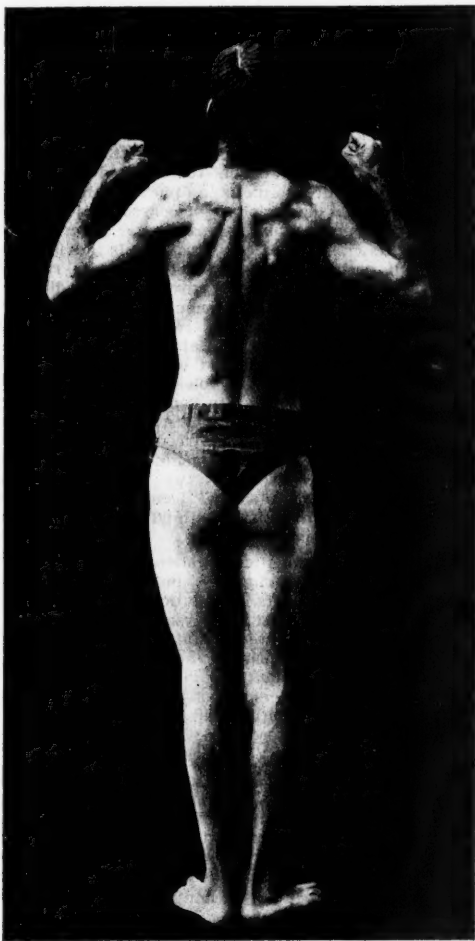
With a thin, somewhat immobile face, an apparently slim frame and a general appearance of weakness, he surprises one, on stripping, by presenting the muscles of a trained athlete, a surprise which is greater when one gets his assurance that for several years his life has been one of enforced inactivity. His muscular condition is fairly represented by the accompanying photographs. Every superficial muscle stands out clearly-defined. There is no hypertrophy here and atrophy there, but an equal proportion of apparently good muscular development—a Herculean type on a slender, bony frame. The biceps, the supinators of the forearm, the muscles of the shoulder girdle, of the back, of the chest, abdomen, buttocks and thighs are revealed with the distinctness of an anatomical model. Only at the extremities is there a tapering off. The hands are small and the intrinsic muscles delicate. So also the calf, peroneal and anterior tibial muscles are relatively small—differing from those of pseudo-hypertrophy—and as previously mentioned there is flat-foot.

On palpating the muscles one receives the impression of excellent tone. There is this abnormality, however, whereas on contraction they are hard, even board-like, on relaxation they do not subside to the usual fleshy state, but remain unduly firm and feel cord-like and fasciculate.

With this appearance of strength there is, on trial, obvious weakness and a weakness which is universally distributed, accounting for his gait, his attitude and his easy fatigue. It is expressed on the dynamometer by a right-hand grip of 20.5 kilograms and a left of 27 kilograms. It is also

¹ Read at a Clinical Meeting of the New South Wales Branch of the British Medical Association, July 11, 1919.

noticeable that the muscles are slowly brought into action; several seconds may elapse before the maximum effort is reached. Similarly, relaxation in the case of most muscles, is delayed. There seems to be what is known as "intention rigidity," a difficulty in initiating movement, in walking, in sitting down or rising from a seat and in grasping objects. At the same time, there is a distinct degree of ordinary rigidity; passive movement of the arm, particularly extension at the elbow, unmistakably produces the "cog-wheel sensation." There is a complete absence of static tremor, but a fine motor tremor is evoked by sustained, strong effort, as in posing to exhibit his muscularity. Static fibrillary tremor is also absent. The intrinsic muscles of the hand



are weak and wanting in flexibility, and his hand-writing, though legible, almost copper-plate, is slowly executed and at an expenditure of much effort. Likewise, all special hand movements, as seen in clothes buttoning and tie fastening, are tiresome performances. From the floor he rises with some difficulty, but he does not climb up his legs, as does the pseudo-hypertrophic. The facial muscles and movements seem to be normal. The tongue can be well-protruded and is free from enlargement or tremor. Articulation also is unaffected, but he says it is impaired under the influence of emotion.

On percussion the muscles do not give the myotonic reaction; only once, in the case of the *spinati*, did I succeed in evoking the slow, wave-like contraction regarded as characteristic of Thomsen's disease. Nor did pinching the free edge of a muscle, like the upper border of the *trapezius* or

the lower border of the *pectoralis major*, induce this contraction, but it did occasionally excite quick fascicular contractions in the body of the muscle, away from the pinched part.

Electrical Reactions.—The electrical reactions are interesting; with faradism, either of muscle or nerve, there is the usual quick response to an ordinary stimulus, but a slight increase, much slighter than is normally needed, produces tonic contraction. With galvanism, also, it is easy to produce a prolongation of the contraction.

Other Features.—The knee-jerks are active and not fatigued by repetition. Other tendon-reflexes are obtainable. The cutaneous reflexes are normal and sensibility is undisturbed. In particular, the appreciation of weights and the sense of posture (muscle sense) are acute. The various organic functions—swallowing, digestion, micturition and defaecation—go on without trouble. Mentally he is alert, cheerful, notwithstanding his circumstances, and a good examinee.



Remarks.

Summing up this case, we find a man who, for the past ten or eleven years, has shown apparently remarkable muscular development, but whose real muscular power is slight and subject to easy fatigue, whose every movement is hampered and impeded by "intention rigidity" and tendency to tonic contraction and whose muscles are unduly firm in relaxation and show an alteration of electrical excitability, suggesting the myotonic reaction.

In these respects the clinical picture fits Thomsen's disease. It is incomplete, however, inasmuch as the marks of familial and congenital origin are wanting. Thomsen, on searching his family history, found twenty cases of the kind in four generations; moreover, he suffered from early

childhood, whereas our patient experienced no symptoms until he was 16 years of age and cannot tell us of familial affection. But knowledge of his family history, as I have mentioned, is restricted. There is no telling what search, as in Dr. Thomsen's case, would disclose. Secondly, I have not been able to satisfy myself of the presence of that increase of the mechanical excitability of the muscles, that "slow, tonic, persistent contraction of the affected part" induced by percussion, said to be so characteristic of Thomsen's disease. Bearing on this, however, reports by other observers tell us that this reaction may be absent in otherwise typical cases. Moreover, as regards the myotonic electrical reaction, Erb, its original describer, states that it is not always obtainable. It would appear that there is a stage in the disease, probably the ingravescent, in which these reactions are specially noticeable and that with the advance of the disease they disappear. Furthermore, there is no question, judging from the literature, that cases vary greatly from the original form, as described by Thomsen. Therefore, I submit that, from the general make-up of the case here presented, the diagnosis of Thomsen's disease supersedes any other diagnosis.

Addendum.

Biopsy.—The patient consented to attend the Coast Hospital, where Dr. Stafford kindly operated and under local anaesthesia excised a portion of the *biceps brachii* muscle, from about its middle; of this, sections for microscopic examination were prepared in the Bureau of Microbiology, under Dr. Cleland's supervision.

The examination of these specimens is disappointingly negative. In size, the muscle fibres appear to be normal and they are approximately equal; in other words, there are neither unduly large nor unduly small fibres. Shape and arrangement are also undisturbed. Similarly, in the substance of the fibres, no morbid changes are visible. On longitudinal section, the striation is clear and on transverse section, there are no granules, as described by Schiefferdecker. Also, the nuclei of the sarcolemma are normal in appearance and number, as are likewise the intramuscular blood vessels and nerves.

The only points suggestive of abnormality are, first, that for some unexplained reason the blocks were extremely brittle and hard to cut; secondly, only one muscle spindle is to be found; it, however, is healthy; and, thirdly, in one of the blocks cut transversely there is a large area of fibro-connective tissue, which may be the remains of an atrophied muscular fasciculus, or as possibly a portion of normal fascia.

Records of cases of Thomsen's disease are contradictory in showing positive and negative pathological findings. The positive findings, from biopsies and one autopsy (Dejerine and Sottas) may be summed up as follows: (1) Hypertrophy of some muscle fibres (which may be twice the ordinary size); an accompanying increase of the sarcolemma nuclei and a slight increase of the interstitial tissue (Erb, Dejerine and Sottas and others). (2) A permeation of the sarco-plasma, with small granules (Schiefferdecker). Whereas, on the negative side, Ponfick, Ballet and others, from biopsies, have failed to find any changes just as I have failed in the present case. In addition to these negative examinations, there has been grave questioning as to whether the hypertrophy of muscles sometimes seen has not been artificially produced. So that, altogether, the pathology of the condition is imperfectly determined. Most of the evidence rests on biopsies, in themselves unsatisfactory, because the field for observation is restricted. In the single recorded complete examination (Dejerine and Sottas) muscle changes alone were found, the nervous system was reported to be healthy.

But while the balance of evidence may suggest that the muscular affection is primary, it is a view which does not invite acceptance. The whole character of the disease more distinctly suggests a nervous origin; it may be in the motor generating area, only to be disclosed by exhaustive examination of the motor cortex, not omitting adjoining zones; it may be a fault in some synapse, for example, where nerve is switched on to muscle, damaging reciprocal inhibition of muscles; or, lastly, if there be truth in the hypothesis that striated muscle has a dual innervation, the twitch element being supplied by medullated and the sarcoplasm or sluggish elements by non-medullated fibres, then search is

to be made in the non-medullated system, because the victim of Thomsen's disease is emphatically wanting in the twitch element.

Reviews.

SHORT CUTS TO KNOWLEDGE.

Parts IV. and V. of the Catechism Series¹ are to hand. Whether the catechism method of imparting knowledge possesses any advantage over an ordinary systematic treatise is doubtful. However, the value of the information contained in these two parts is unassailable. Part IV. deals with diseases of the respiratory organs and of the circulatory system. In the former category are included: coryza, hay fever, epistaxis, various forms of laryngitis, including tubercular and syphilitic lesions, oedema of the glottis, laryngismus stridulus, laryngeal paralysis, bronchitis (acute and chronic), bronchiectasis, asthma, collapse, oedema and gangrene of the lung, emphysema, various pneumonias, tuberculosis of the lung, hæmoptysis, infarction, tumour and abscess of the lung, pleurisy, hydrothorax and pneumothorax, mediastinal tumours. The bacteriology of coryza is given as pneumococcus, pneumo-bacillus, *Micrococcus catarrhalis* and *Bacillus septus*. For epistaxis, ergotin is advised, which would, in all probability, do no good and, by raising the general blood pressure, might aggravate the condition. Adductor laryngeal paralysis, the anonymous author correctly insists, is usually hysterical. As regards the pathology of asthma three views are enunciated: (1) spasm of the bronchial muscles, (2) hyperæmia of the bronchial mucosa, (3) acute catarrh of the bronchioles. Most of the evidence is in favour of the first view. In connexion with pulmonary tuberculosis Calmette's test is rightly condemned. For treatment tuberculin (T.R. or B.E.) is recommended, checked by opsonic estimations. Artificial pneumothorax, it is stated, must be maintained for one or two years. An excellent tabulated differential diagnosis of hæmoptysis from hæmatemesis is given and, in pleurisy with effusion, the importance of Grocco's sign is insisted on.

Diseases of the circulatory system include pericarditis, endocarditis (acute and chronic), individual valve lesions, myocarditis *angina pectoris*, palpitation, tachycardia, bradycardia, arterio-sclerosis and aneurysms. A diagnostic table is given, showing the different manifestations of mitral and aortic disease, but no mention is made concerning the wisdom or otherwise of exhibiting digitalis in aortic regurgitation. The old name of stenocardia for *angina pectoris* is revived and auricular fibrillation and auricular flutter are adequately dealt with in accordance with modern views.

Part V. is devoted to diseases of the nervous system and includes diseases of the spinal cord and its membranes, diseases of the *medulla oblongata*, diseases of the brain and its membranes, diseases of the peripheral nerves, functional diseases of the nervous system, diseases of the muscles (dystrophies, pseudo-hypertrophic paralysis, primary atrophic myopathy, Thomsen's disease). Chronic anterior poliomyelitis is correctly placed as synonymous with progressive muscular atrophy. In treatment strychnine is recommended when spasm is not present. In amyotrophic lateral sclerosis strychnine is said to be contra-indicated. It is difficult to follow the reasons underlying such advice. Acute hæmorrhagic encephalitis is given as synonymous with polio-encephalitis and includes *encephalitis lethargica*. In the diagnosis of tetany various signs are given: Trousseau's sign—pressure on a nerve trunk or compression of a limb sets up typical spasm. In Erb's sign the electrical reactions show enhanced activity and in Chvostek's sign, percussion over a muscle or its motor nerve sets up a lively contraction. The term idiopathic muscular atrophy is nowhere used, but instead this disorder is described under the heading of primary atrophic myopathy.

¹ Catechism Series: Medicine: Second Edition; Parts IV. and V.; 1919. Edinburgh: E. & S. Livingstone; Crown 8vo., pp. 88 and 77. Price, 1s. 6d. each.

The Medical Journal of Australia.

SATURDAY, DECEMBER 13, 1919.

The Bacterial Flora of Influenza.

In this issue we publish the results of a careful study of the bacteriology of the form of influenza which was epidemic in the several States of Australia early in the present year, by Dr. A. H. Tebbutt. It will be remembered that during the period of the epidemic there was something approaching a public panic. The medical profession was not entirely innocent in this respect and consequently the few skilled laboratory workers were practically compelled to pander to the public demand to produce some form of therapeutic agent, notwithstanding that it was universally admitted that the cause of the illness was unknown. In these circumstances a unique opportunity of conducting a quiet, deliberate and consecutive inquest into the ætiology of the disease was lost. Dr. Tebbutt availed himself of the chance to carry out as thorough an investigation into the bacteriology of the condition as time, material and circumstances permitted. He makes no claim at having examined the difficult question of the causal agent. His work leaves us as we were in this respect, as does the work of all other bacteriologists in other countries. The case for the influenza bacillus of Pfeiffer is neither proven nor disproved. The filter passer of Nicolle and the elusive organism of Bradford and Bashford are not held in high esteem to-day. The honest bacteriologist has to admit that hitherto the primary cause of influenza is wrapped in mystery, or perhaps it were better to say in obscurity. There is no apparent justification for the use of the term "pneumonic influenza." There is presumptive evidence that the epidemic disease present in Australia during the early part of 1919 did not differ essentially from the disease commonly known as influenza. It was obviously a severe form and complications were extremely common. Many of the complications were probably caused by organisms other than that producing the initial disease. It is a significant fact that

the sputum and the naso-pharyngeal secretion, when conveyed from the patient to a healthy individual, failed to reproduce the disease. This has been demonstrated by several careful workers in America and has received support from the experiments of Lister in South Africa. It would thus seem as if the secretions of the upper respiratory tract either do not contain the virus of the disease or contain an organism which is so fragile that removal and implantation into the nares of a healthy subject suffices to destroy its continued existence. Investigations have been carried out to ascertain whether the virus is contained in the circulating blood. Dr. W. J. Penfold endeavoured to determine the bacterial contents of blood from four patients. In one instance he obtained a culture of a Gram-negative, non-hæmophilic bacillus, while in a second a pneumococcus was recovered. The blood was sterile in the two others. Lister examined the blood six times. In only one instance did he obtain a bacterium. It was a pneumococcus of type II. Dr. Tebbutt examined the heart's blood *post mortem* twenty-seven times. It appeared to be sterile thirteen times. Pneumococci of type III. (*Pneumococcus mucosus*) were recognized twice, pneumococci of other types, staphylococci, influenza bacilli and other Gram-negative bacilli were isolated irregularly. These results are, as he frankly admits, inconclusive. Blood from the living subject offers better prospects of obtaining reliable results. He examined the blood of six persons suffering from mild, uncomplicated influenza. In one a diphtheroid was obtained and in a second a staphylococcus. He regards these organisms as contaminants and in that view we concur. Blood cultures were prepared from nineteen patients with influenza complicated by pneumonia. Twice the cultures were contaminated with staphylococci. In one instance a streptococcus was obtained and in another *Pneumococcus mucosus*. No information is given concerning the day of the disease or the time of the day when the blood was abstracted. The fact that the organism varied in the two instances suggests that both the streptococcus and the pneumococcus were associated and not primary organisms. The work carried out in connexion with the pneumococci recovered from the lungs and elsewhere after death is important. We would take this opportunity to congratulate Dr. Tebbutt on having attacked

the problem of differentiation between the known types of pneumococci for the first time in Australia. He finds that pneumococcus of type III. was extremely common in the lungs of the persons dead of complicated epidemic influenza. Pneumococci of types I. and II. were apparently very rare. This finding coincides very closely with the conclusions of Lister. Dr. Tebbutt recognizes some members of the indefinite type IV.. Lister classifies these organisms at his sub-group B. In other words, both investigators arrive at the position that something has occurred to endow the common inhabitant of the upper respiratory tract with unusual pathogenic properties. The ordinary pathogenic pneumococcus is not implicated. What the reason is of the accession of pathogenic characters has yet to be discovered.

THE TRANSMUTATION OF ELEMENTS.

Since the days of the Grecian philosophers men have asked whether the structure of matter is continuous or discontinuous. In 500 B.C. Democritus was of opinion that atoms made up the ultimate basis of matter. The atom was then supposed to be the least quantity of matter in existence. Since the writings of Dalton on the atomic theory, chemists have considered the atom to be the least amount of any element which could take a part in a chemical action. Such atoms were held to be in existence although their size was too minute to allow of the perception of single atoms. In the spinthariscopes invented by the late Sir William Crookes the paths of single atoms are rendered visible to the eye. Other investigations which have been completed in recent years, have shown conclusively that atoms do exist. Matter being composed of atoms is therefore not continuous in structure. The researches upon radio-active bodies have indeed shown that the atom has a structure and is built up of electrons. Each electron is a unit of negative electricity. Changes in the characters of atoms are produced by the loss or addition of electrons or of larger particles charged positively with electricity. The exact number of electrons in any atom is not yet known, but it is approximately half the number representing the atomic weight of the element. This knowledge of the structure of matter leads readily to speculation concerning the transmutation of elements. We may ask whether one atom may not

change into another. In the radio-active elements the atom appears to break up suddenly into two or more separate elements. The experiments of the late Sir William Ramsay on the conversion of the stable elements from one form to another by the action of salts of radium are not generally accepted at the present time as evidence that such changes can be accomplished.

In his presidential address¹ to the members of the Royal Society of New South Wales, Professor C. E. Fawsitt discusses the terrestrial evolution of matter. *Inter alia*, he refers to the possibility of the transmutation of elements within the body of the living organism. He points out that the principles of the conservation of mass and energy hold good for all purposes in living things with the same exactness as in the inanimate world. The laws of chemical mechanics may be applied to the reactions in the living animal as well as to the changes *in vitro*.

In 1912 Professor Sir Edward Schafer took the view, in his presidential address to the British Association, that there is no fundamental distinction between living and non-living matter. He held "that when the chemist succeeds in building up this compound (protoplasm), it will without doubt be found to exhibit the phenomena which we are in the habit of associating with the term, life." Sir Oliver Lodge, who succeeded Sir Edward Schafer in 1913, in the presidential chair, took, however, the view that life introduces an incalculable element.

Professor Fawsitt points out that there is no evidence as yet to support the hypothesis that a transmutation of the stable elements occurs in the living body, but he thinks that systematic experiments to test the hypothesis would not be superfluous. He believes that such an evolution of matter would be most readily demonstrated in a plant grown by water culture, though he considers that such a change is more likely to occur in a complex living individual, such as man. He suggests as possible changes the conversion of oxygen to carbon or of phosphorus to a meta-sulphur with an atomic weight of 31. Such changes would involve the liberation of a large amount of energy. In man the energy set free by the conversion of 10 mg. oxygen into carbon would be more than that introduced in an ordinary day's consumption of food.

¹ Delivered at the Royal Society's House, Sydney, December 3, 1919.

The elements needed for the growth of yeast are stated to be hydrogen, carbon, nitrogen, oxygen, magnesium, potassium and phosphorus. For rats calcium seems also to be necessary. Some investigators have alleged that rats fail to grow at a normal rate when more than one of the four elements magnesium, sodium, potassium or chlorine is absent from the food. Professor Fawsitt asks whether the other elements found generally within living matter may not be produced as a result of the incalculable element introduced by the presence of life.

THE FRIENDLY SOCIETIES IN VICTORIA.

In a recent issue we announced that a Mr. Falconer had been sent by the friendly societies of Victoria to England for the purpose of securing the services of medical practitioners in the old country for the recalcitrant friendly society lodges and their medical institutes. It is improbable that this gentleman will be successful in persuading any reputable practitioners to take the positions, even though £1,200 a year or more be offered as salary.

It is well known that the friendly societies in Victoria are resisting the introduction of a long-needed reform in contract practice. The Victorian Branch of the British Medical Association have recognized that satisfactory medical attendance cannot be rendered to persons of small means, unless the conditions of service are equitable. The medical profession throughout the Empire has opposed the extension of the contract system to persons in affluent circumstances and has insisted on its unalienable right to determine the limitations of this system. Medical practitioners are prepared to make concessions to persons of small means, but they insist that the extent of the concessions shall be determined by the earnings of those who take advantage of this arrangement. The Victorian Branch has introduced a uniform agreement between friendly society lodges and medical officers to prevent individual societies or lodges from bargaining with individual practitioners. The agreement contains a fixed income-limit clause, a fixed rate of remuneration and other conditions essential for a satisfactory service. The agreement was not acceptable to the friendly societies and a long struggle ensued, during the course of which many expedients

were adopted by the societies. As the number of practitioners willing to defy the considered decisions of the medical profession in the State was limited, some of the societies established so-called medical institutes and paid the medical officers relatively large salaries. An overwhelming majority of the practitioners in the State recognized that the principle involved was contrary to the interests of the sick poor and of the medical profession. The fact that medical officers are being sought in Great Britain demonstrates that the friendly societies cannot secure a sufficient number in Australia. It would appear that the friendly societies have misgivings concerning their chances of success in this direction. Pressure has been brought to bear on the Premier of Victoria, with the result that the following clause has been introduced into the Health Bill now in committee stage in the Legislative Assembly:—

EE. (1) The Governor in Council may, subject to the Public Service Acts or by special contract, appoint or employ medical practitioners to be Government medical officers for the purposes of this section.

(2) Any municipality may appoint or employ medical practitioners as municipal medical officers for the purposes of this section.

(3) Any such medical officers as aforesaid shall be entitled to receive such salary or remuneration as is agreed upon.

(4) The duties of such medical officers shall be:—

(a) to give medical attendance to persons who are entitled to receive medical attendance pursuant to the rules of any friendly society which is registered under the Friendly Societies Act, 1915, and which enters into an agreement under this section with the Minister or the municipality (as the case may be); and

(b) to perform such other medical duties as are agreed upon or as are prescribed.

(5) When any medical officer has been appointed or employed by the Governor in Council or by any municipality, any such friendly society may enter into agreements with the Minister or the municipality (as the case may be) for the giving of medical attendance as aforesaid by such medical officer, and shall make to the Treasurer of Victoria or to the municipality (as the case may be) such payments, and at such rates as are agreed upon or as are prescribed.

(6) The Governor in Council may make regulations for or with respect to—

(a) the duties of medical officers under this section;

(b) prescribing any terms and conditions to be included in any contracts or agreements under this section;

(c) prescribing rates of payments to be made by friendly societies to the Treasurer of Victoria or to any municipality (as the case may be) for the services of medical officers under this section; and

(d) generally, carrying into effect the purposes of this section.

Returned medical officers are to be given preference for these appointments. In this way the Government is lending its aid to the friendly societies to tempt those who have been away during the course

of the struggle, to engage in contract practice of a most undesirable kind. It is an established principle that there should be no third party intervention between a patient and his medical attendant. The fact that a municipality or the Government will be the employer of the practitioner whose duties will include treatment of friendly society lodge patients, involves an intervention of this kind. The Returned Medical Officers' Association of Victoria will see to it that its members will not apply for these positions.

We trust that medical practitioners in Great Britain will be made aware of the history of the events, so that no one will accept the position of medical officer to one of the medical institutes in ignorance of all the facts.

INTERNATIONAL HYGIENE.

The armistice and the withdrawal of large armies from the western and eastern theatres of war left a series of important organizations with work to finish, but no new channels to develop. The Red Cross Societies of the various allied and neutral countries looked forward to a time when their activities would be restricted. The extraordinary political and military situations in eastern Europe, it is true, rendered it necessary for several of these societies to continue the wonderful work that had commanded the admiration and enthusiastic recognition of the whole world. But the largest societies, those of Great Britain, of the United States of America, of France, of Italy and of Japan, were able to turn their attention toward the middle of this year to some of the problems of peace. The Committee of the Red Cross Societies recognized the necessity of diverting the energies of the existing organizations into fresh channels as long ago as the end of 1918. In April of 1919 a conference of medical men especially interested in the utilization of extensive machines created or developed during and for the war was held at Cannes to discuss this important question. The Committee of the Red Cross Societies was founded with the concurrence and approval of the Governments of Great Britain, the United States of America, of France, of Italy and of Japan, for the purpose of formulating an extended programme of Red Cross activities in the interest of humanity. The societies represented on this Committee created a League of Red Cross Societies and became the first members. A Board of Governors was appointed with Mr. Henry P. Davison, of the American Red Cross Society, as Chairman, Sir Arthur Stanley, of the British Red Cross Society, Count Jean de Kergolay, of the French Red Cross Society, Count Giuseppe Frascara, of the Italian Red Cross Society, and Professor A. Ninagawa, of the Japanese Red Cross Society, as members. Sir David Henderson was appointed Director-General of the League and Vice-Chairman of the Board and Dr. Stockton Axson was appointed Acting Secretary-General. At a later date

Professor William P. Rappard was appointed Secretary-General. A simple constitution was drawn up and on May 15, 1919, the League published the first number of its official bulletin, in which the chief facts of its history and the articles of association are set forth. At a later date Dr. H. Violle, member of the Institut Pasteur of Paris, was elected liaison officer and Mr. Finlay Smith, the representative of the League in Czecho-Slovakia. The collaboration of Dr. Leonard Findlay and of Professor Santoliquido was secured for special purposes. Within the first four months of its existence the Red Cross Societies of Australia, Argentina, Belgium, Brazil, Canada, China, Cuba, Denmark, Greece, Holland, India, New Zealand, Norway, Peru, Portugal, Rumania, Serbia, South Africa, Spain, Sweden and Venezuela became members. The League instituted its headquarters in Geneva. Several prominent persons were appointed to various offices of the League, including Colonel Richard P. Strong as General Medical Director. One of the first acts of the League was to call attention to the conditions of disease and misery prevailing in eastern Europe and particularly Poland, where typhus fever was rampant. The national Red Cross Societies were asked to assist the league in an endeavour to improve the situation. The proposal met with cordial support and as a result a commission, consisting of Surgeon-General Hugh S. Cumming, of the United States Public Health Service, Lieutenant-Colonel G. S. Buchanan, Senior Medical Officer of the British Department of Health, Lieutenant-Colonel A. Castellani, Professor of Tropical Medicine at Colombo, and Dr. F. Visbeek, *Médecin Principal de la Première Classe, Service de Santé de l'Armée Française*, was appointed and left Paris for Warsaw on August 14, 1919. An interim report was issued on September 9, 1919, and a full report with far-reaching recommendations was published in October in the *Bulletin of the League*.

The report reveals the determination of the Commission to attack a problem in preventive medicine of extreme difficulty and of grave import. The story is a long and a sad one and deserves detailed study. We hope to be able to find space for a summary of the principal details in the near future. There are lessons to be learned from it and even if the commission has still to await the fruits of its labours, the manner in which the situation has been approached is of value to all hygienists. We have an example of an international commission, possibly dominated to a considerable extent by an expert member of the United States Public Health Service, investigating an outbreak of typhus fever of alarming extent among a highly susceptible people. It was recognized that the newly-created health authorities in Poland were powerless to stem the tide of the devastating pandemic, because it possessed neither the personnel nor the materials nor the money necessary for the task. In "Congress Poland" in six months 124,620 persons were attacked and close on 10,000 persons died. In other parts of the country the disease was equally wide-spread. The prospects of controlling the infection were rendered almost hopeless on account of the constant influx of refugees and prisoners, clothed in rags, infested with lice and in the direst want. The

country had no clothes to give these people; food supplies were reduced almost to vanishing point; there were but sparse means for cleansing persons and clothes; and there was a serious shortage of medical practitioners and nurses to look after those infected. Relapsing fever was rife among the people; enteric fever and dysentery of the Shiga type was common and there was much venereal disease. The problem was all the more difficult because close on one and a half million people were seeking admission to the interior to swell the hordes of the starving. The commission recognized that humanity demanded prompt action to relieve the suffering Poles. They also recognized that the people of Europe outside Poland and the people of America stood with but a slender barrier between them and a disastrous outbreak of a deadly disease. Military contingencies made it impossible to adopt some stringent expedients to control the disease at the eastern frontier. They had, therefore, to exercise caution and ingenuity in devising a modified sanitary cordon suited to the emergency. Use was made of the fact that the refugees were starving and would not evade the controlling stations, provided that food could be obtained at these places. Means were found to supply some of the urgent wants of Poland and a comprehensive plan of campaign was designed to attack the insidious foe at his vulnerable points. If the programme succeeds, the achievement will be a triumph for modern preventive medicine. If it succeeds to some extent, or even if it fails, the study of the methods selected and of the machinery recommended will remain important for many reasons. While the nations of the world are collaborating in the struggle to stamp out disease, we in Australia are still waiting for the co-ordination of the public health activities of the integral parts of the Commonwealth.

THE EFFECTS OF ANOXÆMIA.

It has been shown that hyperglycæmia can be produced by asphyxia. Definite evidence as to how this is brought about is, however, still wanting. Cannon has suggested that the hyperglycæmia results from emotional disturbance and that there is a relationship between this change and an increased output of adrenalin. In view of the possible significance of an increased activity of the adrenal glands in the anoxæmia induced during flying, Major C. H. Kellaway has carried out some valuable investigations in the Department of Bio-Chemistry and Pharmacology of the Medical Research Committee.¹ It is unnecessary to recapitulate in this place the preliminary experiments necessary for an investigation of this kind. The reader interested in the details is referred to the full paper. Major Kellaway showed that when a goat was kept in an atmosphere containing 8.5 volume per cent. of oxygen for 45 minutes, the oxygen saturation of the venous blood was reduced to approximately one half of its original value. He then proceeded to study the

paradoxical pupil reaction. This reaction is noted in cats whose superior cervical ganglia have been removed. The effect of the removal of the ganglion on one side is to reduce the size of the pupil on the same side, to prolapse the nictitating membrane and to narrow the palpebral fissure. When the cat is rendered anoxæmic, both pupils are seen to be widely dilated on the removal of the mask. If the pupils be illuminated, the normal one contracts, while the denervated one remains dilated for a variable period. The nictitating membrane is retracted and the palpebral fissure is wider than on the normal side. Removal of the adrenal glands obliterates the paradoxical reaction. It is generally accepted that the reaction is dependent on the action of an excess of adrenalin. In the presence of extreme asphyxia, the dilation of the denervated pupils follows independently of the action of adrenalin. From the carefully-planned experiments with cats after the removal of one superior cervical ganglion, it was evident that anoxæmia leads to a rise in the blood sugar and to an increase in the quantity of adrenal liberated. It was seen, however, that both the hyperglycæmia and the increased adrenal activity were induced in normal animals as a result of emotional disturbance. Major Kellaway has formed the opinion that in his animals there was a stimulation of the central nervous system which gave rise to the passage of impulses along the splanchnics. This resulted in an overstimulation of the liver cells and consequently in the mobilization of glycogen. In addition there was a stimulation of the adrenal glands and a consequent increase of activity. The latter caused indirectly an additional output of glycogen. Moreover, he has come to the conclusion that when the diminution of oxygen in the blood is large, the activity of the adrenals is directly stimulated. He is further inclined to the view that after the removal of the adrenal glands the accessory chromaffin tissue may yield sufficient adrenalin to produce the paradoxical pupil reaction. It is shown, however, that the reaction under these conditions is inconstant and weak. He refers to it as a residual effect. In endeavouring to apply the knowledge gained experimentally to the conditions of men flying in aeroplanes, he suggests that the fitness of men for flying might be determined by the measurement of the blood sugar during anoxæmia. The tests might be planned either to determine the smallest reduction of oxygen in the air inhaled to produce hyperglycæmia or to determine the degree of the hyperglycæmia produced by the inhalation of an atmosphere deficient in oxygen to a known degree. Before tests of this kind could be used to advantage, it would be necessary to make a large number of observations on normal, apparently healthy individuals. The tests would be somewhat elaborate, but as the selection of pilots in peace time can proceed without undue haste, this objection is scarcely valid. It is further suggested that the application of the test would militate against improvement in the case of flying men who suffer from air sickness. While it must be admitted that the tests would increase symptoms of nervousness, it would lead to the exclusion of men temperamentally or physically unfitted for the vocation of air pilot.

¹ The Effects of Diminished Tension of Oxygen, With Especial Reference to the Activity of the Adrenal Gland, by Major C. H. Kellaway, A.A.M.C., Reports of the Air Medical Investigation Committee, Medical Research Committee, National Health Insurance, Special Report Series, No. 37, 1919.

Abstracts from Current Medical Literature.

SURGERY.

(203) War Wounds of Joints.

Pierre Duval (*Surg., Gynec. and Obstet.*, September, 1919) points out that while in 1914-15 the mortality in war wounds of the knee joint was 27.6% and amputation was performed in 30%, in 1917-18 the mortality had sunk to 0.9% and amputation was performed in only 2.8% of the cases. Improved results are attributed to immediate operation, with closure of the joint. The defensive power of the synovial membrane is more active than was previously thought. The synovial fluid in a war wound of the joint remains uninfected for 24 to 48 hours. This is the time for operation; the contaminated edges are excised, the foreign body removed and complete suture without drainage practised. Immediate, active mobilization of the joint is recommended. Primary resection is reserved for cases with extensive comminution. Two different modes of procedure are used, the one in which the peri-articular wound is treated first, the other in which the joint wound treatment precedes the toilet of the other tissues. The arthrotomy incisions must be ample. Division of the external lateral ligament is practised in elbow lesions. In the knee, the U-shaped arthrotomy with section of the patellar ligament should be reserved for extensive injuries of the bones and for intercondylar and posterior wounds. For lateral wounds and simple perforations the large unilateral or the bilateral arthrotomy is the method of choice. Transpatellar arthrotomy is not suitable for war wounds. At the ankle, shoulder and wrist the incision varies with the size of the wound. A bone cavity continuing to bleed into the joint may be filled up with a muscle pedicle. Fissures are opened up, scraped and then replaced. The most important point is to re-establish as far as possible a normal joint line. The serous fluid in a joint must be dried up as much as possible to prevent coagulum being left. The muscle repair, especially of the triceps and quadriceps extensor, must never be forgotten. If a joint has been left beyond the safe period of 24 to 48 hours and is full of suspicious fluid, it is still best to suture it and, if purulent arthritis later develops, to perform early resection.

(204) Hæmorrhagic Pancreatitis.

Lefevre (*Bull. et Mem. de la Soc. de Chirurg.*, July 30, 1919) reports a case of hæmorrhagic pancreatitis in a man aged 39, who was admitted to hospital with violent paroxysmal abdominal pain and tenderness most marked above and to the right of the umbilicus. His temperature was 37.5° C., pulse 60 and he vomited continuously. A provisional diagnosis of perforated duodenal ulcer was made and laparotomy performed. Immediately a large amount of blood-stained serum escaped from the ab-

domen and a hard, large mass was palpable behind the pylorus. The lesser omentum was seen infiltrated in the blood. The head, neck and part of the body of the pancreas were discovered to be engorged with blood and much swollen. Drainage was employed through the gastro-hepatic omentum after packing the part with gauze. Six days later there were sepsis at both lung bases, but the patient made a good recovery after the persistence for some weeks of a fistula from which the fluid caused severe irritation. The fæces were clay-like and contained fat during the early days after operation and for a time there was sugar in the urine.

(205) Wound Shock.

Cowell summarizes the recent investigations into wound shock (*Lancet*, July 26, 1919). The clinical factors in the pathogenesis of shock are fatigue, exposure, lack of fluids and the presence of excitement before the receipt of the wound and after the receipt of it, pain, hæmorrhage, cold and the absorption of toxins. Pathologically there may be present besides the arterial hypotension capillary stasis, reduction of blood volume, absorption of toxins, diminution of intracellular oxygenation, acidæmia and lowered temperature. Clinical evidence has supported the adrenalin theory of shock and experimentally Cannon has demonstrated the presence of adrenalin in the blood of animals under emotional stress. Acidosis is probably but a symptom of lowered tension and defective circulation. Certain anæsthetics have a baneful action, particularly chloroform, and the only anæsthetic to be used in cases of hypotension is nitrous oxide and oxygen. In treatment the psychological aspect of the case should not be forgotten; warmth and fluids should be employed and if the pressure does not quickly rise gum saline solution should be injected intravenously. When actual blood loss is the chief factor, blood transfusion should be carried out. No evidence has been obtained of any permanent benefit from pituitrin, adrenalin, ergot, atropine, camphor or strychnine.

(206) Ulcer of the Lesser Curvature.

The results obtained from the two recognized methods of treating ulcers of the lesser curvature of the stomach are compared by Pierre Duval (*Bull. et Mem. de la Soc. de Chirurg.*, July 9, 1919). It has been shown statistically that the mortality following a saddle-shaped resection is practically the same as that following Balfour's method of cauterization with gastro-enterostomy. The author insists that the quality of the result obtained is different. The stomach has a motor as well as a digestive function and it has been shown by radiological examination in cases of excision that an interference in the gastric motility persists. The lesser curvature is more rigid and less mobile while the wave along the lesser curvature shows the stomach after excision to be functionally bilocular. This result is not surprising in view of the fact that resection cuts the nerves and the

longitudinal muscle fasciculi. A radiological examination after the Balfour operation is quite otherwise. Furthermore, the technique in Balfour's operation is more simple and, since it has been shown that stomach ulcers are infected with streptococci, Balfour claims that the thermocautery has a valuable sterilizing effect.

(207) Marching Fracture.

A fracture of a metatarsal bone, most commonly the second, occurring during prolonged exertion and known as "marching fracture," is described by Greig (*Chin. Journ.*, October, 1919). The first and fifth metatarsal bones are the strongest and the second the weakest, probably from its freedom of movement being hampered since it is wedged in between the internal and external cuneiform bones. Fracture takes place after the foot is thoroughly tired and the patient may not be conscious of its occurrence. Frequently he is able to continue at duty for some time after the accident. The body of the bone most commonly gives way at a point near the neck. The old-time dictum that these bones can be broken only by direct violence is thus disproved.

(208) Intestinal Stasis.

The clinical symptoms of intestinal stasis are grouped by W. Arbuthnot Lane (*Practitioner*, March, 1919) under two headings: those due to its mechanical effects and those caused by auto-intoxication. The delay originates in the pelvic colon and is reflected back along the whole course of the large bowel, so that the passage of chyme into the caecum may be obstructed by an accumulation there of fæcal material. The angulation and stagnation at the duodeno-jejunal junction is brought about by the drag of an abnormally loaded small bowel. Spasms of the pylorus and changes in the mucous membrane follow. The toxic effects from delay in the large bowel are embraced by all that the term colitis implies. The infection of the liver and pancreas by way of the duodenum causes inflammatory changes in these organs. All the tissues of the body become lowered in vitality by the absorption into the blood of deleterious matter from the intestines. The beneficial effects of the recumbent position are emphasized again. An abdominal support like the Curtis's belt, which exerts pressure on the abdomen below the umbilicus, is recommended and paraffin oil advised before meals.

GYNÆCOLOGY AND OBSTETRICS.

(209) Adeno-Myomata Containing Uterine Mucosa.

T. S. Cullen (*New York State Journ. of Med.*, August, 1919) gives a bird's eye picture of adeno-myomata and their distribution and describes their clinical features. Adeno-myoma of the body of the uterus may be limited to the anterior or posterior wall or form a mantle on zone just outside the uterine mucosa. Scattered throughout the

diffuse growth small cyst-like spaces lined with a velvety membrane and filled with the characteristic chocolate-coloured, old menstrual blood are often noticed. In course of time portions of the diffuse adeno-myoma may project into the uterine cavity; in other cases a portion of the growth is forced out and may form a sub-peritoneal adeno-myoma. The symptoms are increase in amount of the menstrual flow and usually a great deal of pain in the uterus due to the swelling of the mucosa scattered throughout the uterine walls. Removal of the uterus is indicated. This is often difficult on account of the tendency of this organ to become adherent to the surrounding structures. Adeno-myoma of the round ligament occurs usually near the external ring; the growth swells perceptibly at the periods. It may be mistaken for hernia. Adeno-myomata of the utero-ovarian and utero-sacral ligaments have been reported, but are of little clinical significance. Adeno-myoma of the recto-vaginal septum are of unusual importance and if overlooked will in time cause the patient to become a chronic invalid and in some cases it will cause death. The tumour usually starts just behind the cervix and can be felt as a small nodule about a centimetre in diameter. As it grows it becomes blended with the anterior rectal wall. It spreads laterally and may compress the pelvic nerves and ureter. Later it breaks through into the vagina. The symptoms in the early stages are pain before and at the start of the period, especially at the time of defaecation; later some bleeding from the rectum may occur and pressure symptoms also appear. The growth usually involves the posterior part of the cervix. If this cannot be shelled out, the uterus must be removed together with a cuff of vaginal mucous membrane and a wedge of the anterior rectal wall. Uterine mucosa at times appears in the ovary and endo-myomata may occur at the umbilicus.

(210) The Treatment of Myoma Uteri.

John G. Clark (*Journ. Americ. Med. Assoc.*, September 27, 1919) discusses the treatment of myoma and myopathic hæmorrhages of the uterus with radium. The use of radium is limited mainly to women within the menopausal cycle, as 50 mgrm. of radium applied for 24 hours within the uterus of a young woman will, in many instances, bring on an abrupt and serious menopause. In his study of results certain facts stand out in relief. The tumour must be uncomplicated by inflammatory disease. It must be causing hæmorrhage and it must not be too large. As a rule a tumour larger than a three months' pregnancy is unsuited for radium treatment. Pain and especially pain lateral to the uterus is a contra-indication. He states that he employs radium mainly for one symptom, *viz.*, hæmorrhage. In myopathic changes in the uterus and in the smaller myomata causing excessive flow, a safer or more certain means of relieving this symptom has not been found and he considers a small myo-

matous uterus causing menorrhagia in a middle-aged woman as no longer within the surgical domain. The symptoms accompanying radiation are: (1) considerable nausea and vomiting within 24 or 48 hours; (2) pain rarely occurs and may be due to the preliminary diagnostic curettage. The author recommends omitting the diagnostic curettage in cases in which there is menorrhagia without inter-menstrual bleeding. (3) Leucorrhœa is present in all cases for from 3 to 6 weeks. (4) menopause; the symptoms are more marked in cases with marked anæmia. In six cases out of over 150 the irradiation failed to relieve and a subsequent hysterectomy was performed. He adopts the following technique in the case of women in the menopausal years. After a preliminary diagnostic curetting 50 mgrm. of radium are placed in the uterus and left in for 24 hours. In women under 40 years the dosage is graded, according to the age, down to a six hours' application. The women are kept in bed for three days and then allowed to go home.

(211) The Treatment of Extra-Uterine Pregnancy.

Alfred C. Beck reports a case of full-term extra-uterine pregnancy in which both the mother and the infant lived (*Journ. Americ. Med. Assoc.*, September 27, 1919). He gives statistics of 262 cases of ectopic pregnancy and comes to the following conclusions from a consideration of the data. He considers that every case should be reported on account of the high mortality and the infrequent occurrence of extra-uterine pregnancy persisting after the fifth month. The relatively large number of infants who survive operation, does not justify a disregard of the interests of the child. He finds that the operative risk during the last month is less than at an earlier period. Very little added risk is incurred by keeping the patient under observation until the 38th week before operating. Interference at the 38th week offers the best opportunity for the survival of the infant. Before the operation is commenced, preparation for the treatment of hæmorrhage should be carried out. He advocates the removal of the placenta, but insists on a careful examination beforehand to determine the best means of dealing with it. The fact that the placenta is attached by a pedicle is quoted in favour of removal. In addition the author points out that the ovarian and uterine portions of the blood supply of the placenta are easily exposed. The uterus is sufficiently accessible from the side opposite that involved to permit hysterectomy. The uterine end of the placental vessels can thus be ligatured from this side. He holds that the vessels supplying the placenta should always be ligatured before any attempt is made to remove the organ. When this cannot be achieved, the placenta should be left in the abdomen. The abdomen can be closed without drainage, provided that hæmorrhage and infection are excluded. The placenta is eventu-

ally absorbed. He admits that there is a slight risk of secondary hæmorrhage before the placenta is completely absorbed. When this occurs or when an infection from the adjacent intestines takes place, a second operation may be necessary. Marsupialization should be limited to those cases in which removal of the placenta is contra-indicated and the presence of infection demands drainage, or in which hæmorrhage necessitates the use of a tampon. Continuous drainage is attended by a distinct risk of infection.

(212) The Albuminuria of Pregnancy.

Edward P. Davis (*Canadian Med. Assoc. Journ.*, July, 1919) states that the toxæmias of later pregnancy may be grouped under three headings: (1) The common nephritic albuminuric type, (2) the less common hepatic type, (3) the infrequent type, due to improper functioning of the ductless glands, notably the thyroid. He sketches the symptomatology and pathology of these types. Emphasis is laid upon the great importance of preventive treatment. The ideal food for the pregnant woman is comprised of milk, fruit and bread; nitrogenous food in large quantities should be avoided. The patient should drink at least one litre of water daily and the bowels should act regularly and freely. In regard to treatment, he states that the routine use of Cæsarean section gives a greater maternal and foetal mortality than other recognized methods. The sedative treatment of Stroganoff gives good results, but the author prefers an active eliminative treatment, as follows: Venesection is performed and 450 to 750 c.cm. of blood withdrawn and an equal quantity of normal saline solution introduced. The stomach is washed out and calomel left in. The large intestine is irrigated with nine litres of salt solution and the irrigation repeated in from two to four hours. Sweating should be promoted by hot bottles. No effort should be made to control the fits with narcotics or anaesthetics, as they are likely to interfere with elimination. In from six to eight hours the patient will be better or worse. With a multipara labour may be induced by rupturing the membranes. In the case of a primipara with no improvement after eight hours' treatment and the child in good condition, Cæsarean section may be performed. After delivery, two dangerous complications threaten: (1) Pulmonary œdema and (2) mania. The treatment of the hepatic type of acute toxæmia is essentially the same as that of the nephritic albuminuric type. In thyroid cases thyroid extract may be of use during pregnancy; Cæsarean section is advised at term, to avoid the strain of labour. He mentions association of acute toxæmia of late gestation and accidental separation of the normally situated placenta. He concludes by asking obstetricians to dissociate the acute toxæmias of pregnancy from inevitable convulsions and also inevitable labour, as he has seen patients weather the storm of toxæmia and subsequently give birth to living children.

British Medical Association News.

MEDICO-POLITICAL.

An extraordinary meeting of the New South Wales Branch was held on December 5, 1919, at the B.M.A. Building, 30-34 Elizabeth Street, Sydney, Dr. F. P. Sandes, the President, in the chair. Before the beginning of the business of the meeting, the President extended a warm welcome to Colonel R. J. Millard, C.M.G., who had returned from active service. He also conveyed the congratulations of the Branch to Professor A. E. Mills on his appointment to the chair of medicine at the University of Sydney.

The Prohibition of the Importation of Bacteriological Products and Sera.

Professor A. E. Mills moved as follows:—

(1) That, in the opinion of the New South Wales Branch of the British Medical Association, the prohibition of importation of bacteriological products and sera imposed by the Federal Government by the proclamation of November 1, 1919 (*Commonwealth of Australia Gazette*, No. 126, November 3, 1919) is detrimental to the public interests, on the following grounds, namely:—

- (a) That a monopoly of any materials necessary for conserving the public health is undesirable.
- (b) That it is not yet definitely proved that the products of the Commonwealth Serum Laboratories are sufficient to meet the many and constantly varying requirements of the community for the treatment and prevention of disease.

(2) That this resolution be conveyed to the Federal Government, with the request that the proclamation of November 1, 1919, so far as it relates to bacteriological products and sera, be withdrawn.

Professor Mills referred in the first place to the wording of the proclamation (see *The Medical Journal of Australia*, November 22, 1919, page 438). It was clear from the document that the prohibition was already in force and was definite, except under the licence of the Minister of State for Trade and Customs. The Minister would be the last court of appeal from any person, firm or institution, from the Branches of the British Medical Association or even from the whole Association itself. They would have to depend on the judgement of a man who knew nothing about the subject. He did not know who would be the advisers of the Minister and he asked the meeting if they were prepared to allow an unknown person to determine what bacteriological products and sera ought to be excluded and what products should be admitted. A telegram had been received from the Director of Quarantine, to the following effect:—

Importation bacteriological products sera not prohibited understand Governments intention control importation under licence in order prevent large advance importations in anticipation tariff revision.

He thought that it would be wise not to take this telegram too literally. The Director claimed that the importation was not prohibited. The proclamation, on the other hand, made it quite clear that the importation was prohibited, except under licence. In the next place, it was not clear whether the Director of Quarantine understood the Government's intention or whether he wished the meeting to understand it.

In regard to the first of the two reasons embodied in the motion, he presumed that everyone present would agree that it was undesirable that any monopoly should be set up. There had been a great outcry against monopolies, combines and trusts and now the Federal Government proposed to establish what was, in effect, a monopoly.

In regard to the second reason given, he wished to point out that certain firms had in the past provided the medical profession with articles which they had learnt to trust and which had proved of great value in the treatment of disease. The medical profession had been satisfied with the products issuing from the laboratories of the Lister Institute, Messrs. Burroughs Wellcome & Company, Messrs. Parke, Davis & Company and Messrs. H. K. Mulford Company. They had been asked to give up these products in which they had confidence. Professor Mills stated that the profession was convinced of the excellence of the Commonwealth Laboratory and impressed by the ability and scientific accuracy of its

well-trained Director, Dr. W. J. Penfold. But without disparaging the work conducted in the Commonwealth Serum Laboratories, they were justified in asking whether these laboratories could cover the supply. There were many products which had not yet been issued; for example, in a recent announcement from the Laboratories there was the statement that concentrated diphtheria antitoxin was not yet ready. He understood that there was no antitetanitic serum yet available. Moreover, he wished to call attention to the fact that the institution had been in existence for a relatively short time and that, in order to establish the claim that the products were as good as or better than those of the Lister Institute, laboratory and clinical tests spread over a number of years would be required. He referred to the fact that the Director-General of Public Health of New South Wales had issued a protest at the suggestion of the Medical Superintendent of the Coast Hospital, in regard to the prohibition of these products. In conclusion, Professor Mills stated that the products of any institution must stand or fall by comparison with those of other laboratories. He commended the motion to the meeting.

Dr. E. W. Fairfax seconded the motion. He expressed grave doubt concerning the possibility of one institution being able to supply all the sera and other laboratory products necessary for the community. He agreed with Professor Mills that the excellence of these preparations could only be determined by comparison.

Dr. A. H. Tebbutt supported the motion. He thought it was advisable to bring to the notice of members the fact that the Commonwealth Serum Laboratories were not producing many products which were being supplied by other laboratories. Messrs. Burroughs Wellcome & Company produced anti-tetanitic serum, anti-colon bacillus serum, anti-dysentery serum, anti-gonococcal serum, various forms of anti-streptococcal sera, numerous forms of tuberculin other than old tuberculin, which was supplied by the Commonwealth Serum Laboratories, pneumococcus vaccines and so on. Messrs. Parke, Davis & Company put up pertussis vaccines, typed pneumococcal vaccines, coagulose, Coley's fluid, diphtheria toxin for diagnostic purposes, gonococcus antigen for the complement fixation test, luetin and a number of phylacogens which many medical practitioners used with apparent success. The Mulford Company produced, among many other products, a long list of sensitized sero-bacterins and typed anti-pneumococcal sera. It was clear that the exclusion of these, among many other preparations, would be detrimental to the public interest. It was said that these firms could obtain a licence to import. It might be so, but he had had information from a private worker which caused him to doubt the statement. This person had made an application for permission to import a special product several weeks ago. He had not received a reply to his application up to the time of speaking. Dr. Tebbutt had found it very convenient in conducting laboratory work to be able to order bacteriological products from the other side at short notice. If it became necessary to obtain a licence each time, his work would be greatly impeded. Turning to the question of the Australian preparations, he claimed that their quality was not yet definitely proven. He had a very high opinion of Dr. Penfold's ability and he was sure that he would be able to deliver first-class products. But it was absolutely necessary for him to demonstrate that these products were first-class. The new order gave the profession no option but to take the products that Australia could offer them. This was not always what they wanted. As an example, he quoted the vaccine prepared by the Commonwealth Serum Laboratories during the influenza outbreak. He differed strongly from Dr. Penfold in regard to the dosage of the vaccine. In order to obtain what he wanted, he had bought vaccine from the Mulford Company. Had the proclamation then been in force, he would have been compelled to accept the Commonwealth vaccine.

Dr. C. H. E. Lawes was doubtful whether the second reason should be put forward. There was no doubt that at present the Australian laboratories were incapable of supplying all that was required. But he questioned whether it was correct to describe the action as the creation of a monopoly. There was nothing to prevent private practitioners from manufacturing these products. He approved of protection and encouragement of Australian industries. Would it not be possible to ask for the removal of this restriction for a period, such as five years?

Dr. R. J. Millard did not agree with Dr. Lawes. He thought that it was unsound in principle to place any restriction on the importation of bacteriological products and sera. He recognized only one restriction in the use of these products, namely, the restriction of choice. The Director of Quarantine had suggested that the reason for the prohibition was to prevent the importation of large quantities of these substances, pending a revision of the tariff. If this were correct, it would have the effect of driving up the price of substances necessary for the health of the people.

Dr. H. W. Palmer objected to the action of the Federal authorities in playing with the health of the sick poor. The power to grant licences would be in the hands of unknown persons. He claimed that the medical profession should insist on obtaining the best substances for the treatment of disease. He maintained that many of the imported bacteriological products and sera were the best. Moreover, he doubted whether the small Federal Institute would ever be able to compete on equal terms with the great laboratories elsewhere.

After Professor Mills had made a brief reply, the question was put to the meeting and was carried without a dissenting vote.

Alien Enemy Practitioners.

Dr. R. Scot Skirving stated that he had been asked to take charge of a motion that would not require much boosting. The motion he was about to propose consisted of four parts, which might be taken in *globo* or separately. It was as follows:—

(i.) That the New South Wales Branch of the British Medical Association protests against those medical practitioners who were interned during the war, as being alien enemy subjects or otherwise dangerous to the community, being allowed to resume practice.

(ii.) That the New South Wales Medical Board be asked to take steps for the removal from the Medical Register of—

(a) persons registered in virtue of German or Austrian qualifications, not resident or practising in New South Wales; and

(b) persons registered who have been interned as alien enemy subjects or otherwise.

(iii.) That the Federal Government be asked to deport those medical practitioners who were interned during the war as being alien subjects or otherwise dangerous to the community.

(iv.) That the Federal Government be advised that claims, understood to have been made on behalf of one or more of the medical practitioners who were interned during the war, that they possessed certain special knowledge essential to the well-being of the community, which would be lost by their deportation, are not based on any known facts; and that any special knowledge or alertness that they may have had, is possessed, perhaps in greater degree, by many practitioners in different parts of the Commonwealth.

It was, he exclaimed, a righteous motion. The first part spoke for itself. It was not right or just or fair that those whom they had treated before the war with all the *camaraderie* and fellowship which they gave to their own flesh and blood and who had been openly or covertly disloyal to that hospitality, should be received back and treated as if nothing had happened and as if all were well. He asked his audience what would be the fate of a British practitioner resident and practising in an alien town, such as Berlin or Vienna? What would his position have been had they won? What would have been his position, even now that they had not won? He would not have had the slightest chance and would not have been allowed to make a living. If he knew his German at all, he would have been kicked out into utter darkness. At least they were consistent in hunting out those they did not love.

The second part of the motion dealt with the removal of persons registered in virtue of German or Austrian qualifications. Their British hospitality had gone too far for years before. They had not introduced the system of reciprocity. In France a British practitioner was not allowed to practice without a French degree. In Germany a foreign doctor was required to pass the *Staatsexamen*. What was their feeling on this question now? The position had been accentuated after four and a half years. These men should be removed.

The third part followed as a matter of course. In turning to the last part, he said that he did not want to speak with personal bitterness, although it was difficult to avoid doing so, when they had lost so much at the hands of the fellow-countrymen of these individuals and when they knew the immutable nastiness of the Boche. It was impossible not to feel that they would be nourishing vipers in their bosom, if they allowed them to practise. He did not know whether it was necessary for him to talk personally about the men. Of the four registered practitioners who had been interned as alien enemy subjects or otherwise, there were two whom he did not even know by name. The four were George Baur, a doctor of medicine of the University of Munich, Max Herz, also of Munich, Friedrich Wilhelm Finselbach, a Sydney graduate, and Edgar Ferdinand Setzke, a graduate of the University of Greifswald. He might say that anything he knew of the two men before the war had not impressed him greatly. He had taught one of them. The other, Max Herz, he had sized up unfavourably in those days. Nor, as he would say later, had he regarded the practice of this man anything wonderful or out of the way. He was supposed to have been an expert orthopaedic surgeon. It had been advanced in certain quarters by lay, certainly, and by political persons, probably, that some of these men ought to be allowed to practise again among them, because of their special knowledge and usefulness to the community. Honestly he could say that, if he were in need of treatment, he would rather be in Sydney than in any other place in the world. He knew the worst and the best of his fellow-practitioners and the best of them were unsurpassed anywhere in the world. That was the simple truth. He had no hesitation in saying that this argument was totally unjustified and doubly so with the new knowledge gained from war surgery. In regard to the subject of orthopaedics, the specialty followed by Herz, he claimed that there were men in Sydney whose knowledge of this special subject and whose usefulness to the community was as good, nay, much better than that possessed by any alien practitioner. And in some cases that knowledge had been augmented by the enormous experience of the deformities found among those crippled by wounds.

If political reasons or the sublime folly and forgetfulness of the British race allowed these enemies in their midst still to make a living out of the people of Australia, he doubted whether that living could ever be a lucrative one. There were scores of practitioners, like himself, who would have no truck personally or professionally with any of these men who belong to enemy nations and whose depraved and unbearable outlook in life was as unchanged to-day as their action and power for evil had been bad in the past.

On all grounds, therefore, he considered it to be their duty, as loyal citizens, as men who had suffered much at the hands of these enemy countries and whose goodness and hospitality had been requited by spying and evil-doing, that they should use every means in their power to prevent these men from living and practising among them, from fattening and battenning on the Australian people. He, therefore, had much pleasure in asking his colleagues to adopt the motion he had read in its four component parts.

Dr. F. Guy Griffiths seconded the motion. He maintained that these persons had been dangerous to Australia before the war, they had been dangerous during the war and they would be dangerous after the war, when peace had been ratified, if they were allowed to remain. In Australia they had followed the absurd practice of admitting all and sundry into the medical profession. Yankee horse doctors and men with diplomas from imaginary colleges were received with open arms. The position at present in Tasmania exemplified the folly of this policy. British practitioners were not welcomed anywhere in the world outside the British Empire. In Germany a British practitioner who passed the German examination, was restricted in his practice to British residents. Dr. Griffiths dealt at some length with the question of reciprocity. In the next place he stated that Max Herz had previously been in New Zealand. He had practised his profession there, but he had also made a study of the social conditions and had published a brochure on the subject. He had proved himself to be an expert in sociology, as well as a specialist in orthopaedics. They would be mad to allow a German sociologist to remain among them to help the Hun to prepare for another attack, which was

surely coming. He asked his listeners whether they were impressed by Herz's claim as an orthopaedic surgeon. It was preposterous to argue that British surgery that had produced Owen Thomas and Robert Jones and that had created the specialty of orthopaedics, had anything to learn from the foreigner. The Federal Government were taking steps to prohibit the importation of British and allied bacteriological products, but were also prepared to allow enemy practitioners to remain among them. He had much pleasure in seconding the motion.

Dr. A. Smith Marr spoke as a representative of the medical men in the west. He stated that Max Herz had been allowed to practise in the internment camp. Baur was starting practice at Bathurst and Neumann was practising at Manildra. The members of the Western Medical Association thought that Neumann should not be allowed to remain in practice to the detriment of those who had recently returned to the west after having fought for their country. He claimed that all alien enemy practitioners should be de-registered and deported.

Dr. J. C. Storey asked whether the motion would involve the removal of the names of all alien enemy practitioners, irrespective of whether they had been interned or not. He would be glad if it would have this wide significance.

Dr. R. H. Todd thought that some of the men who had been absent on active service, were unaware of the present state of the law in New South Wales. In 1915 the *Medical Act* had been amended. The new Act contained a reciprocity clause. No one could claim registration in virtue of a diploma, degree or licence issued in a foreign country unless the right of registration was granted in that country to graduates of the Sydney University. A foreign medical practitioner seeking registration in New South Wales was required to pass an examination at the University of Sydney. It had been determined after careful consideration that the qualifying examination would be the final examination for the M.B. degree, in addition to a part of the fourth year examination. It would thus be seen that ample protection had been obtained against the admission into the medical profession in New South Wales of persons with insufficient knowledge. The new Act further provided that no German or Austrian subject could be registered in the State under any circumstances whatsoever. In the year 1916 the Branch had recommended the Board to remove from the Register the names of those practitioners who had been interned and the names of persons who had been registered in virtue of German or Austrian qualifications, but were not resident or practising in New South Wales. The Medical Board had approached the Government to ascertain whether this could be done under the powers given to the Board by the new *Medical Act*. The Crown Solicitor had advised that the Medical Board had no power to remove these names. They then appealed to the Federal Government to take action under the provisions of the *War Precautions Act*. The Prime Minister, however, did not think it desirable to apply that Act for this purpose and suggested that fresh legislation should be passed in New South Wales for this purpose. Dr. Todd pointed out that it was always difficult to obtain the passage of fresh legislation. A Bill had been drafted and presented to Parliament. It had, however, not yet been properly discussed. There was no chance of it being brought forward again during the current session. In reply to Dr. Storey, Dr. Todd stated that the motion did not cover those who had not been interned. It was perhaps undesirable to go as far as that. Some of the practitioners who had been registered in virtue of German or Austrian degrees or diplomas might not be regarded as undesirable. In any case, it was better to be on the safe side.

Dr. C. E. Wassell informed the meeting that the Returned Medical Officers' Society of New South Wales had endeavoured to obtain an interview with the Prime Minister, to bring this matter to his notice. As an interview had not been granted, they had written to the Prime Minister, dealing with the subject in principle. Dr. Wassell stated that the Aliens Board had recommended the deportation of Max Herz. He had been allowed to practise at the concentration camp. The matter would be ludicrous, if it were not so very serious. Dr. Wassell referred to the Hirschfeld case. He was glad to say that, thanks to the action taken by the Queensland Branch and other bodies, Hirschfeld had been interned. In reference to the case of Neumann, Dr. Wassell

expressed the opinion that there was something to be said in favour of the Boche who had had the pluck to stand up and admit that he was in sympathy with his own countrymen.

Dr. J. W. E. Bean obtained patient but unsympathetic hearing during a long speech, recommending the qualification or modification of the motion. He admitted that friendship and comradeship between Australians and the German people was at present neither possible nor desirable. He would not condemn a German merely because he acknowledged sympathy with his countrymen. He thought that an independent commission should inquire into the merits of each of the cases. If it were proved that there had been underground dealings and spying, the persons should be deported. He dwelt upon the necessity of an impartial arbiter.

Dr. W. H. Crago reminded the meeting of the scandalous behaviour of Max Herz on the occasion of the sinking of the *Lusitania*.

Dr. T. Storey Dixon pointed out that every German doctor had been required to serve in the German Army. They had been called upon to swear allegiance to the Kaiser. With this knowledge kindly sentiments ill-befitted the situation. At the present time there were thousands of doctors starving in Germany. Would Dr. Bean advocate that these men should be allowed to come to Australia to practise? He had had experience of the German officer, with his insolent brutality, in Alsace. The Kaiserite and the Prussian could not be trusted. He doubted whether they could realize what a German victory would have meant to the people of Australia. As President of the Medical Board, he had been very glad to listen to the clear explanation given by Dr. Todd of the position. The unfortunate part of the situation was that the other States did not have the same satisfactory law as New South Wales. The Tasmanian scandal illustrated the necessity of proper legislation governing registration.

Dr. C. H. E. Lawes reminded Dr. Bean that the case of each of the men who had been interned, had been subject to a searching inquiry. The Aliens Board had actually recommended the deportation of Max Herz and possibly of the others.

Dr. R. J. Millard asked whether any definite information was available concerning the claims alleged to have been put forward in favour of Max Herz. It was stated that the whole matter had been published in the daily press.

Dr. A. A. Palmer said that the Federal Government could not claim ignorance concerning the actual state of affairs. When he was President of the Branch the Council had brought the facts prominently to the notice of the Federal Government. He thought that Dr. Scot Skirving's admirable speech should be published in the lay press. He informed Dr. Millard that he had heard it suggested that Max Herz was possessed of more than usual ability as an orthopaedic surgeon.

The motion was put to the meeting and carried unanimously.

The President announced that the President of the Royal Society for the Welfare of Mothers and Babies had invited the members of the New South Wales Branch and their wives to be present at a reception to be given by Dr. Truby King at the King's Hall, Phillip Street, Sydney, at 8 p.m. on December 17, 1919. He read the following letter and expressed the hope that the members would take advantage of the opportunity of interesting themselves in the subject of mother and baby welfare with which the medical profession was necessarily concerned.

Dear Sir,—Dr. Truby King, of New Zealand, who has just returned from the United Kingdom, where he has been commissioned by the Government to establish Mother and Baby Welfare Centres, will be the guest of the State Government and this Society from the 16th to the 20th December. During his stay he will attend the following fixtures:—

Reception by the Royal Society for the Welfare of Mothers and Babies, King's Hall, Hunter Street, on Wednesday, 17th December, at 8 p.m..

Lecture by Dr. Truby King, King's Hall, Hunter Street, Thursday, 18th December, at 8 p.m..

Lecture and Conference, Assembly Hall, Education Building, Friday, 19th December, at 8 p.m..

May I ask the co-operation of your Association in making these functions a success. Any of your members and their wives will be welcome guests, the presentation of their cards at the door being quite sufficient. A personal invitation to yourself will, of course, be forwarded.

Yours faithfully,
(Signed) S. R. INNES-NOAD.

President.
Royal Society for the Welfare of Mothers and Babies,
New South Wales,
Chief Secretary's Building, Sydney,
November 26, 1919.

THE RATTEN INQUIRY.

The Premier of Tasmania announced on November 28 that he had written to the Secretary of the Medical Council, advising that body to inquire immediately into the question of the validity of the diploma on which Victor Richard Ratten obtained registration as a medical practitioner. He recommended that the inquiry should be a public one.

VENEREAL DISEASES.

The following are the official returns of cases of venereal diseases notified in Victoria and Tasmania during the six months ending September 30, 1919:—

Victoria.			
	Males.	Females.	Total.
Gonorrhœa	2,096	216	2,312
Syphilis, Acquired.. ..	588	261	849
Syphilis, Congenital	71	72	143
Soft Chancre	57	2	59
Gonorrhœa and Syphilis ..	80	10	90
Gonorrhœa and Soft Chancre	6	1	7
Gonorrhœa, Syphilis and Soft			
Chancre	3	0	3
Syphilis and Soft Chancre	3	0	3

Tasmania.			
	Males.	Females.	Total.
Gonorrhœa	172	30	202
Syphilis	31	14	45
Chancroid	3	1	4

Naval and Military.

HONOURS.

The following statements of services for which decorations were awarded, have been published in the *London Gazette* of March 8 and June 3, 1919:—

Distinguished Service Order.

Major Robert Fulton Craig, 15th Field Ambulance, Australian Army Medical Corps. For conspicuous gallantry and devotion to duty in charge of the bearer division near Bellicourt from September 29 to October 2, 1918. During the whole of this period he rendered valuable service, and by his coolness and initiative surmounted all difficulties under most trying conditions. He not only worked the evacuation of wounded from near aid posts of his own brigade, but he personally reorganized the evacuation from other brigades under very heavy shell and machine-gun fire.

Military Cross.

Captain Leslie Thomas Alsop, 10th Field Ambulance, Australian Army Medical Corps, attached 39th Battalion, Australian Infantry. On September 29, 1918, east of Ronssoy, he established a regimental aid post close to Gillemont Ruins, then held by the enemy, and, under heavy fire, tended the wounded. For forty-eight hours he was continuously at work organizing stretcher parties and dressing the wounded.

Captain Joseph Ringland Anderson, Australian Army Medical Corps, attached 45th Battalion, Australian Infantry. For conspicuous gallantry and devotion to duty during the attack west of Bellenglise, north of St. Quentin, on September 18, 1918. During a protracted advance he established his regimental aid post well forward in the open, and continued with cool courage to attend the wounded under heavy shell fire. His efforts saved many lives.

Captain William Johnstone Binns, Australian Army Medical Corps, attached 33rd Battalion, Australian Infantry. For conspicuous gallantry and devotion to duty during the operations near Bony, from September 29 to October 2, 1918. Throughout he was untiring in his efforts, and worked with the greatest zeal. Altogether he established four different aid posts, all close to our leading troops. He attended wounded in the open under heavy fire, and by his fine devotion to duty saved many lives.

APPOINTMENTS.

The following appointments, promotions, etc., are announced in the *Commonwealth of Australia Gazette*, No. 131, of November 27, 1919:—

Australian Imperial Force.

Second Military District.

Captain J. a'B. D. Barton, Australian Army Medical Corps, is granted the honorary rank of Major, 5th May, 1919.

Lieutenant-Colonel (Temporary Colonel) W. L. Kirkwood, O.B.E., Australian Army Medical Corps, to officiate as Deputy Director Medical Services, Australian Imperial Force in Egypt, and to retain the temporary rank of Colonel, *vice* Colonel D. G. Croll, C.B.E., 17th July, 1919.

Third Military District.

Captain T. C. Backhouse, Australian Army Medical Corps, having resigned, his appointment in the A.I.F. is terminated, 1st July, 1919.

Major (temporary Lieutenant-Colonel) C. L. Clarke, Australian Army Medical Corps, to officiate as Assistant Director, Medical Services, Australian Mounted Division, and to retain the temporary rank of Lieutenant-Colonel, *vice* Colonel R. Fowler, O.B.E., Australian Army Medical Corps, 17th April, 1919. (This cancels notification regarding this officer which appeared in Executive Minute, No. 807, promulgated on page 1696 of *Commonwealth of Australia Gazette*, No. 127/19.)

Major T. R. E. Davis, Australian Army Medical Corps, to officiate as Assistant Director, Medical Services, Headquarters, A.I.F., *vice* Lieutenant-Colonel C. L. Chapman, D.S.O., 18th July, 1919.

Lieutenant-Colonel (temporary Colonel) R. Fowler, O.B.E., Australian Army Medical Corps, to be Colonel, 11th November, 1918.

Captain K. A. McLean, M.C., Australian Army Medical Corps, to be temporary Major, 12th August, 1919.

Captain J. G. Skeet, Australian Army Medical Corps, having resigned, his appointment in the Australian Imperial Force is terminated, 23rd August, 1919.

Fifth Military District.

Lieutenant (temporary Captain) T. A. M. Wilson, Australian Army Medical Corps, having resigned, his appointment in the Australian Imperial Force is terminated 24th August, 1919.

Sixth Military District.

Captain H. A. S. Newton, Australian Army Medical Corps, to be temporary Major, 12th August, 1919.

APPOINTMENTS TERMINATED.

First Military District.

Colonel D. G. Croll, C.B.E., 30th October, 1919.

Second Military District.

Colonel J. A. Dick, C.M.G., 19th October, 1919.
 Major T. L. Willsallen, D.S.O., 4th November, 1919.
 Major G. L. Kerr, 20th August, 1919.
 Captain G. Bell, O.B.E., 21st September, 1919.
 Captain A. M. Aspinall, 20th October, 1919.
 Captain C. Anderson, M.C., 8th October, 1919.
 Captain C. Badham, 9th October, 1919.
 Captain M. J. Frizell, 1st October, 1919.
 Captain G. M. Faithful, 24th September, 1919.
 Captain B. B. Blomfield, 15th September, 1919.
 Captain M. Archdall, 24th September, 1919.
 Captain D. Christie, 20th August, 1919.
 Captain T. B. Clouston, 8th October, 1919.

Third Military District.

Colonel R. M. Downes, C.M.G., 5th September, 1919.
 Colonel T. P. Dunhill, C.M.G., 12th September, 1919.
 Major C. H. Anderson, 5th October, 1919.
 Major C. L. Clarke, 8th November, 1919.
 Major K. McK. Doig, M.C., 26th October, 1919.
 Major J. S. Reed, 17th October, 1919.
 Major N. L. Speirs, 19th August, 1919.
 Captain M. J. Holmes, D.S.O., 25th October, 1919.
 Captain A. E. Brown, 30th October, 1919.
 Captain J. W. Grieve, 7th October, 1919.
 Captain R. H. Crisp, 14th October, 1919.
 Captain D. H. Bodycomb, M.C., 30th September, 1919.
 Captain T. J. K. Whitlam, 7th October, 1919.
 Captain K. A. Stephenson, 17th October, 1919.
 Captain J. S. McLean, 18th September, 1919.
 Captain J. C. Ross, 9th August, 1919.
 Captain J. Stewart, 3rd October, 1919.

Fourth Military District.

Captain J. G. Sweeney, 14th October, 1919.
 Captain P. S. Messent, 26th June, 1919.
 Captain E. E. Broadbent, 13th September, 1919.
 Captain G. Brown, 4th September, 1919.
 Captain R. L. T. Grant, 1st February, 1919.
 Captain L. J. Keipert, 6th August, 1919.
 Captain L. A. Wilson, 1st February, 1919.
 Captain H. A. Sweetapple, 11th March, 1919.

Fifth Military District.

Captain F. H. Wallace, 1st September, 1919.

Sixth Military District.

Major W. I. Clark, M.C., 7th October, 1919.
 Major C. G. Thompson, 15th September, 1919.

AMENDMENT.

Second Military District.

The rank of Lieutenant-Colonel A. K. Mackenzie, D.S.O., M.C., is as now shown, and not as stated in Executive Minute, No. 597/19, promulgated on page 1251 of *Commonwealth of Australia Gazette*, No. 100, dated 14th August, 1919.

Australian Naval and Military Expeditionary Force.

APPOINTMENT TERMINATED.

Second Military District.

Captain R. A. Gardner, 20th October, 1919.

Australian Military Forces.

APPOINTMENTS, PROMOTIONS, ETC.

*Second Military District.**Australian Army Medical Corps—*

Robert Grieve Woods to be Captain, 3rd October, 1919.

Captain H. G. Humphries and Captain (Honorary Lieutenant-Colonel) W. E. Grigor, O.B.E., are transferred to the Reserve of Officers, 1st October, 1919.

Honorary Captain (temporary Lieutenant-Colonel) Sir H. L. Maitland is transferred to the Reserve of Officers, and to retain the temporary rank of Lieutenant-Colonel, whilst employed at No. 4 Australian General Hospital, 1st October, 1919.

Captain (provisionally) J. Mackenzie is transferred to the Reserve of Officers and to be Honorary Captain, 1st October, 1919.

Captain W. A. H. Burkitt is transferred to the Retired List with the honorary rank of Major, and with permission to retain such rank and wear the prescribed uniform, 1st October, 1919.

Australian Army Medical Corps Reserve—

Roland Gordon Banks-Smith to be Honorary Captain, 22nd September, 1919.

*Third Military District.**Australian Army Medical Corps—*

Captain P. G. Dane is granted the temporary rank and pay of Lieutenant-Colonel whilst employed at No. 5 Australian General Hospital, 6th October, 1919.

Captain H. J. Cahill is transferred to the Reserve of Officers, 15th October, 1919.

The resignation of Captain H. H. Field-Martell of his commission is accepted, 18th October, 1919.

*Fourth Military District.**Australian Army Medical Corps—*

Lieutenant-Colonel (Honorary Colonel) A. E. Shepherd, C.B.E., to be Principal Medical Officer, 4th Military District, and Officer Commanding No. 7 Australian General Hospital (temporarily), 12th November, 1919.

Lieutenant-Colonel H. E. Russell to relinquish the temporary appointment of Principal Medical Officer, 4th Military District, 11th November, 1919.

Australian Army Medical Corps Reserve—

Honorary Major R. S. Rogers to relinquish the temporary rank of Lieutenant-Colonel on vacating the temporary appointment of Officer Commanding No. 7 Australian General Hospital, 11th November, 1919.

Our attention has been directed to the following order which was issued some months ago and which deals with a question of considerable importance at the present moment:—

The following priority in regard to appointments of area medical officers and officers in medical charge of permanent groups is approved:—

(i.) Returned Citizen Force officers, provided they carry on duty connected with the Australian Army Medical Corps, Citizen Forces.

(ii.) Returned medical officers who held appointments as area medical officer at the commencement of the war.

(iii.) Returned officers of the Australian Army Medical Corps Reserve.

(iv.) Medical officers of the Australian Army Medical Corps (active list) who have not been on active service.

(v.) Medical officers of the Australian Army Medical Corps Reserve who have not been on active service.

(vi.) Civilian medical practitioners.

The Director-General, Medical Services, Major General Sir Neville R. Howse, V.C., K.C.B., has returned to Australia. The whole of the medical profession will join us in offering to the man who is responsible for the biggest achievements in the history of the medical profession of Australia, a hearty welcome home.

MEDICAL OFFICERS' RELIEF FUND (FEDERAL).

The Trustees acknowledge, with thanks, receipt of the following donations and promises for the above-named Fund:—

(TENTH LIST.)

Queensland.

	£	s.	d.
Dr. A. C. F. Halford	105	0	0
Dr. A. A. Doyle	21	0	0
Dr. D. A. Cameron	20	0	0
Dr. A. C. Ward	10	10	0
Dr. E. Sirois	10	10	0

Dr. P. J. Kelly	10	10	0
Dr. A. Jefferis Turner	10	0	0
Dr. V. McDowall	10	0	0
Dr. Egmont Schmidt	5	5	0
Dr. C. H. Seaforth	5	5	0
Dr. J. Booth-Clarkson	5	0	0
Dr. T. A. Price	5	0	0

Victoria.

Dr. R. C. Brown	50	0	0
Dr. R. H. Morrison	50	0	0
Dr. J. W. Florance	25	0	0

New South Wales.

Dr. G. E. Rennie	100	0	0
Dr. G. Moncrieff Barron	21	0	0

Total to December 9, 1919, £10,239 16s. 7d.

UNIVERSITY OF ADELAIDE.

The Senate of the University of Adelaide appointed on November 28, 1919, Dr. John Burton Cleland, Principal Microbiologist in the Department of Public Health of New South Wales, to the chair of Pathology at the University. The position is an important one, more particularly because medical education in Australia, as elsewhere, is undergoing fundamental changes. Dr. Cleland is to be congratulated on his appointment. He will have ample opportunity to perform work of a highly important character in the Adelaide School.

At the same meeting of the Senate Dr. W. R. Cavanagh-Mainwaring was appointed Lecturer in Principles and Practice of Surgery, Dr. R. H. Puleine was appointed Lecturer in Otology and Dr. H. S. Newland Lecturer in Comparative Surgery. Several re-appointments were also made.

Obituary.**MELVILLE RICHARD HINDMARSH JAY.**

Melville Richard Hindmarsh Jay was born at Willunga in South Australia in the year 1856. At an early age he entered St. Peter's College and passed through his school days with great success and distinction. For three years he was the senior boy in the school. He obtained three scholarships, a record which was beaten by none and equalled by only one for many years after he left the school. He was equally excellent in the playground and was captain of the school football and cricket teams. On leaving school, it was determined that he should follow in the footsteps of his father, the late Dr. Richard Gardner Jay. He became a student of the Adelaide Hospital, where his brother was House Surgeon. In 1875 he travelled to England and entered St. Thomas' Hospital. In the year 1880 he obtained the diplomas of Member of the Royal College of Surgeons of England and of the Licentiate of the Society of Apothecaries of London. In the following year he received the Licentiate of the Royal College of Physicians. He practised for a time in London and then returned to South Australia, where he was registered in August, 1881.

As his father had died while he was in England, he started practice in partnership with the late Dr. Wylde in North Adelaide and remained in general practice in the same district until 1908. He was appointed a member of the visiting staff of the Adelaide Hospital many years ago, but with several others resigned his appointment at the time of the rupture between the members of the visiting staff and the Board of Management of the Hospital. Though he was a man who did not seek publicity, he rose high in his profession. He was chosen by his colleagues to be President of the South Australian Branch of the British Medical Association in 1904. He was also elected medical officer to several public institutions.

In 1909 he sold his practice and went abroad, partly for the sake of his health and partly to study the specialty of otology, rhinology and laryngology. When he returned, after an absence of about two years, he suffered from increasing ill health, which placed restraint on his bodily activity and was a great source of distress to him. In May, 1919, he was

attacked by acute illness and on October 23, 1919, he passed away. During the latter years of his life he was an enthusiastic gardener. He spent the greater part of his spare time in the open air with a hose or hoe. At an earlier period he had taken great interest in golf. He had been an active member of the Adelaide Golf Club almost from its inception. He was elected Captain of the Club in 1904. He held the position of Honorary Surgeon to the South Australian Jockey Club for many years.

Dr. J. A. G. Hamilton writes:—

May I bring the tribute of a few words to the memory of my old friend, Melville Jay. I think I may claim the honour of being his most intimate friend ever since I came to Australia. I first met him in 1877, when I was appointed Surgeon to the Wallaroo Hospital. He came up there to attend to the affairs of his brother, Dr. W. Jay, who had died rather suddenly. He was then a student at the Adelaide Hospital. At the time I was laid up with a severe attack of ptomaine poisoning. There being no other doctor near, he manfully took charge of the Hospital, with some 30 patients. I could see then that he took a very keen interest in his work and showed talent of no mean order and predicted that he had a brilliant future in front of him. Shortly afterwards he went to England to complete his studies and gain his qualifications, where he quickly gained the reputation of being a particularly brilliant student. On his return to Adelaide he very quickly built up a very large and remunerative family practice. He had always a strong leaning towards surgery and was soon recognized as an unusually neat and skilful operator. Personally Melville Jay was a most lovable man and a delightful companion, always the life and soul of any party gathering at which he might happen to be present, always the same smiling face and genial manner, big-hearted and generous to a fault. He made hosts of friends and I think I may truthfully say no enemies. A good athlete in his youth, he took a great interest in all forms of sport. For many years he was a keen follower of racing, being many years Surgeon to the South Australian Jockey Club. He was also an ardent golfer and was Captain of the Adelaide Golf Club for some time; in fact, everything in the way of sport appealed strongly to him. His death leaves a gap in the circle of his friends which it will be impossible to fill.

Correspondence.**GOVERNMENT MEDICAL OFFICERS.**

Sir,—I was interested to read a communication on this subject over the signature of Patrick Blackall in your issue of November 29, 1919.

I have no doubt that your correspondent's query will be dealt with fully by the Executive of the Returned Medical Officers' Society of New South Wales.

My interest centres more in the opening sentence of the last paragraph—the recognition by those men who were not on service, that those who were should be "suitably rewarded." A pretty thought!

Early in the war, when the various State Councils passed resolutions pledging that the interests of those who went overseas, would be conserved by those who remained, most of us, I fear, were foolish enough to hope that this might happen. In how many cases have the men come back to find their interests so well "conserved" that they have to start again at the bottom of the ladder, handicapped by an absence of 4½ years or less from their work? While individuals who have done nothing for their country—except swagger about in a uniform of the Reserve and call themselves Captain That or Major This—are fattening off the appointments and practices of those who offered everything, the crowning insult of all being that the returned men had to do a month's duty at the Anzac Buffet, because so many officers of the Reserve were too busy in their private capacity to attend! Owing to the activities of such bodies as the Returned Medical Officers' Society of New South Wales, the affairs of returned men will no doubt improve.

There would have been no need for their activities had

not the men who stayed at home, regarded their Council's pledges as so many proverbial scraps of paper.

Those who were with the forces overseas, were there from a sense of duty, and, having done their duty, they look for no "suitable rewards." They do expect their rights, however.

Yours, etc.,

JOHN S. SMYTH, M.B., Ch.M. (late A.A.M.C., A.I.F.).
Guy Street, Warwick,
Queensland, December 1, 1919.

Books Received.

- RECENT ADVANCES IN THE TREATMENT OF SYPHILIS, by R. K. Sen, with a Foreword by P. Fraser, M.B., C.M., D.M., B.Sc.; 1919. Sydney, Calcutta and London: Butterworth & Company; Crown 8vo., pp. 82. Price, 5s. 6d.
- THE ESSENTIALS OF CHEMICAL PHYSIOLOGY, FOR THE USE OF STUDENTS, by W. D. Halliburton, M.D., LL.D., F.R.C., Tenth Edition; 1919. London: Longmans, Green & Company; Demy 8vo., pp. 324. Illustrated. Price, 7s. 6d.
- MARRIED LOVE: A NEW CONTRIBUTION TO THE SOLUTION OF SEX DIFFICULTIES, A BOOK FOR MARRIED COUPLES, by Marie Carmichael Stopes, D.Sc., Ph.D., with a Preface by Dr. Jessie Murray and a Letter from Professor E. H. Starling, Seventh Edition, revised and enlarged; 1919. London: G. P. Putnam's Sons, Ltd.; Sydney: Angus & Robertson, Ltd.; Crown 8vo., pp. 189. Price, 7s. 6d.
- THE PHYSIOLOGY OF MUSCULAR EXERCISE (MONOGRAPHS ON PHYSIOLOGY), by F. A. Bainbridge, M.A., M.D., D.Sc., F.R.C.P., F.R.S.; 1919. London: Longmans, Green & Co.; Royal 8vo., pp. 214 illustrated by 22 diagrams. Price, 10s. net.

Medical Appointments.

It is announced that Dr. J. H. Chauncey has been appointed Medical Officer of the Venereal Clinics and Dispensaries established or to be established in the Metropolitan Area of Brisbane and Medical Officer of the Detention Hospital at the Brisbane Hospital.

Dr. Eric P. Barbour (B.M.A.) has been appointed Government Officer at Dorrigo, New South Wales.

For six months on probation, Dr. R. M. Mackay (B.M.A.) has been appointed Assistant Medical Officer to the Rookwood State Hospital and Asylum, New South Wales.

The appointment of Dr. A. F. Lynch (B.M.A.) as Honorary Gynaecologist to the Adelaide Hospital is announced.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxi.

University of Melbourne: Stewart Lecturer in Pathology. Croydon District Hospital, North Queensland; Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.

Branch.	APPOINTMENTS.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmmain United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

- Dec. 16.—Tas. Branch, B.M.A., Branch and Council.
Dec. 16.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
Dec. 26.—Q. Branch, B.M.A., Council.
Jan. 6.—N.S.W. Branch, B.M.A., Council (Quarterly).
Jan. 6.—Tas. Branch, B.M.A., Branch and Council.
Jan. 9.—Q. Branch, B.M.A., Council.
Jan. 9.—S. Aust. Branch, B.M.A., Council.
Jan. 13.—N.S.W. Branch, B.M.A., Executive and Finance Committee; Ethics Committee.
Jan. 15.—Vic. Branch, B.M.A., Council.
Jan. 17.—Northern Suburbs Med. Assoc. (N.S.W.).

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated. All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 20-24 Miles Street, Sydney.